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The Lumleian Lectures, 1928, delivered at the Royal College of Physicians of London

BY JAMES COLLIER, M.D. LOND.,
FELLOW AND COUNCILLOR OF THE COLLEGE; PHYSICIAN AND LECTURER ON MEDICINE, ST. GEORGE'S HOSPITAL.

LECTURE I.

Delivered on March 22nd, 1928.

MR. PRESIDENT AND FELLOWS OF THIS COLLEGE,—I am fully sensible of the high honour which this College has conferred on me in selecting me to give the Lumleian Lectures for this year. I wish to express to you my deep appreciation of the honour and my thanks.

I have chosen as my subject "Epilepsy" because this seems to me an opportune moment to review this symptom-complex in general, for there has been much written of late years both in this country and abroad upon epilepsy and upon closely allied conditions which has brought to light some new clinical facts and many ideas widely divergent from those conceptions as to the nature of epilepsy, which were formerly held to be orthodox. A few of these hypotheses taken at random may here be mentioned as showing that there is a necessity at the present time to make an analysis of the opinions held by authorities and to make the attempt to bring them into line, though they are sometimes widely divergent, and to produce a useful working theory.

There is Foerster's conception that the epileptic attack may have its starting-point, and therefore its locus morbi, in any part of the nervous system, both peripheral or central. There is Oppenheim's conception that epilepsy is a toxicopathic malady with cerebral manifestations. There is the book of Rows and Bond published last year describing epilepsy as "a functional mental illness amenable to psychotherapeutic measures." And while Hartenberg has made his theory widely known that the initial and essential event in every epileptic attack is a cessation and loss of function, all positive phenomena such as hallucinations and convulsions being referred to "release phenomena" occurring in lower levels of the nervous system no longer under control, Gordon Holmes holds stoutly to the cerebral cortex as the site of commencement of epileptic phenomena, to excitation as the physiological process, and to the "gunpowder and match" hypothesis of tradition.

Adie has done excellent work in helping to separate the very real syndromes of "Pyknolepsy" and of "Narcolepsy" from the idiopathic epilepsies, among which they have often remained unrecognised, and contends that the former is a disease "sui generis," and that it has no connexion with, and does not mix with, epilepsy.

Sutherland contends that the attacks which may occur in patients with heart-block and in patients with paroxysmal tachycadia, in which attacks I believe almost every phenomenon known in epilepsy has been described in one case or another, have no connexion with epilepsy whatsoever, but that they are simply the results of lowered blood pressure.

Meanwhile I have been contending for some common pathological factor which will serve to explain the identity of the train of symptoms which make up idiopathic epilepsy, with those which may occur in other disordered bodily states such as uræmia, cholæmia, hypoglycæmia, rickets, &c., and with those which sometimes occur, but with a strange inconstancy, in every kind of lesion in any position in the cerebral hemispheres, even in simple lack of development of the brain.

In all these hypotheses there is some element of truth and of value. My interest in the subject of epilepsy has always been deep, and I am fairly conversant with the clinical manifestations and treatment of this malady as met with in hospital and private practice, but I have no personal experience of the institutional treatment of epilepsy.

In these lectures, which must of necessity reflect my personal conception of epilepsy, gained from careful consideration of clinical facts which I have myself observed, I shall attempt the argument that the clinical phenomena met with in idiopathic epilepsy, in epilepsy from local lesions of the brain, and in the symptomatic epilepsy occurring in disordered metabolic states, in general diseases and intoxications, are identical and are truly indistinguishable. And that those occurring in narcolepsy, migraine, vaso-vagal attacks, idiopathic syncopal attacks, and perhaps also in tetany are phenomena of the same order and are closely allied to those of epilepsy with which they occasionally mix. And that there is one pathological factor which is common to all these conditions, and this is hypothesised as a metabolic dyscrasia, the nature of which is not always quite the same and therefore different clinical syndromes occur in which the prognosis varies.

THE NATURE OF EPILEPSY.

Epilepsy is common in birds and it affects all mammals; the horned cattle rarely, the carnivora and the primates more commonly. In all these epilepsy occurs just as it is met with in man, as an idiopathic disease; or resulting from local lesions of the brain; or symptomatic of general diseases and intoxications. The ætiological factors seem to be the same as in man. Hereditary transmission was well shown in the case of the prize bull recorded by Le Notte, who was an epileptic, for the best specimens of his progeny were invariably epileptics. Cruzel's cow was an epileptic who gave birth to three epileptic calves consecutively, and Otto's epileptic bitch was wont to produce epileptic puppies. Hutyri and Marck lay stress on the teething convulsions of young dogs and young pigs and the development therefrom of established epilepsy, and they point out the major incidence upon rickety animals, and they record puerperal convulsions in horses and cows, in dogs and in pigs. The clinical manifestations are the same with major and minor attacks, local and general attacks; epilepsy occurring exclusively in sleep, as in Haltenbach's cat; presumable auræ from the evidence of terror and cries of distress from the animal immediately prior to the fit, or perhaps he takes to his heels and bolts to fall in a fit after the manner of the classic "cursive" epilepsy in man. There is also "reflex" epilepsy, well known when wounds, especially of the withers, horns and hoofs, have cicatrised; post-epileptic paralysis and the usual train of post-epileptic phenomena; and also status epilepticus. Further, the epilepsy so occurring in animals is ameliorated by the administration of the bromides.

So far as the so-called "idiopathic" epilepsy which thus affects man and the animals is concerned no pathological changes have been found upon which any hypothesis as to the nature of epilepsy can be built up. The findings have been for the most frankly negative, or such changes as have been found in severe and long-standing cases as may be reasonably attributed to long-lasting disorder of function. Attention has therefore turned to the possibility of finding an explanation of epilepsy in some perversion of the chemistry of life—some metabolic dyscrasia which may lead to the presence of substances within the system which act upon the nervous system as do the convulsant poisons and which may further, by depriving the nervous system of its customary activators, cause in some cases a progressive impairment of the higher functions of the nervous system. Experimental investigations upon these lines have been at times suggestive but not very fruitful. Donath thought that he had found the essential convulsant poison in choline, and Mott showed that a watery solution of choline applied to the surface of the brain would produce convulsion and also post-convulsive transient paralysis. Choline, however,

seems to be a product of degeneration within the nervous system and cannot, I think, be found within the body in idiopathic epileptic states. Krainski, doubtless arguing from the occurrence of epileptic phenomena in uræmia, suggested that ammonium carbamate, produced within the system from disorder of metabolism, was the epileptogenous agent, and this is present in the blood of uræmic persons and to a small extent in some epileptics. Hahn, Masser, Nercki, and Pawlow have shown how readily fits may be produced in dogs by the injection of calcium and sodium carbamate and, more recently, Bisgood and his co-workers have put forward the hypothesis that the disturbance of metabolism in epilepsy is a "disregulatio ammoniaci" depending upon the disturbance of the function of the parathyroid glands, and J. Madsen following them, claims benefit from a calcium-parathyroid treatment in epilepsy, though he does not consider that epilepsy is a disease of parathyroid origin. He thinks that the parathyroid gland acts as an ortho-regulator as opposed to a dys-regulator of ammonia metabolism, and that a disturbance of ammonia metabolism is a factor in the production of epilepsy.

Some highly interesting and suggestive experiments have been made by Pagniez, Mouzon, and Turpin upon the toxicity of the serum of epileptic patients at the time of the attack. They found that when such serum was injected into the heart or into the carotid artery of animals, a series of convulsions occurred which lasted some half an hour and often ended fatally. No such convulsions occurred in any of the control animals into which healthy serum or the serum from uræmic patients or patients afflicted with general paralysis was injected. These experiments suggest very strongly that the determining agent for the epileptic attack is present in the blood, but only when the attack is about to occur and not at other times.

Bossard has put forward the theory that the immediate cause of the epileptic attack is "anaphylactic shock" from some product of disordered metabolism, and that the local effect thereof is upon part of the cerebrum, while the general effect is shown by the fall in the blood pressure and the leucopenia which he claims invariably and immediately to precede every epileptic attack of any magnitude. This theory is enticing, for it compares the rapidity of onset of the epileptic attack with the well-known dramatic suddenness with which anaphylactic phenomena may occur. It is in line with the well-established hypothesis that puerperal convulsions—which I prefer to call puerperal epilepsy—are caused by anaphylactic occurrences within the brain. It corresponds with the explanation of migraine—a malady very like epilepsy, often associated with epilepsy and sometimes hardly distinguishable from epilepsy, which is current at the present time, that this malady is due to local anaphylaxis in the brain with swelling of the brain and at times local disturbance of function. A similar swelling of the brain at the time of the epileptic attack may well account for the headache and mental dullness which often follows.

Bossard's hypothesis is a suggestion as to how a metabolic dyscrasia or toxic condition of the blood might reasonably act upon the nervous system, if indeed such dyscrasia or toxæmia exist. It is not contradicted by any experimental evidence, and upon it all the clinical manifestations of epilepsy can be intelligibly explained. It is a useful working hypothesis for the present. But by far the most important statement he makes is that the blood pressure falls with the onset of the attack, or rather that one of the essential features of the epileptic attack is a fall of blood pressure. If this is true it is of far-reaching importance, for it does away with the hard-and-fast line of separation between epileptic manifestations and syncopal attacks which has been laid down by many authorities, including Gowers, who argued that there was no conspicuous fall of blood pressure in an attack of epilepsy, and who stated that he had had his fingers upon the pulse many times at the moment of attack and had observed neither alteration of rate or tension. I shall have occasion to remark later on that such a strict separation between syncopal attacks and epileptic attacks is clinically difficult from several points of view and that in my opinion it is rather artificial than real.

Such an initial fall of blood pressure, if proved to be constant in the epileptic attack, would, I hope, serve to further rid our minds of that explanation in pathology for so many ill-understood diseases—arterial spasm. There is certainly pallor of the face with the onset of many epileptic attacks, and pallor of the brain has been noted by several observers. Indeed, Foerster makes the wonderful statement that he has on one hundred occasions witnessed an epileptic fit upon the operating table when he has had the brain exposed, and that he had noticed the sudden pallor of the brain with the onset on every occasion. He was, of course, arguing for arterial spasm.

Following upon this work, attempts have been made to desensitise the epileptic patient between his attacks by the injections of his own blood taken at the time of the attack, and though good results have been claimed, we have not been able to confirm them at Queen-square. The well-known tendency for epileptic fits to disappear for the time being during acute infections and after the injection of foreign serums and proteins, led to the researches of Tinel and Santanoise, who have shown the existence in their epileptic patients of alternating periods of sensitivity and immunity. Protein therapy has consequently been used for the treatment of epilepsy by many hands without any convincing result.

The endocrine organs have been searched histologically with great care in epileptics by Schou and Susman with negative results. On the clinical side one finds the occurrence of epilepsy in some of the cases of pituitary disease, both in the acromegalic type and in the Fröhlich type, but especially, I think, in those presenting arrest of bodily growth in childhood which correspond with Lorrain's type of infantilism.

In some cases in which thyroidectomy has been performed epilepsy has been observed usually associated with tetany. In others there have been severe attacks of tetany with loss of consciousness and incontinence of sphincters, suggesting a blend of epilepsy and tetany. In the case of a middle-aged woman admitted under my care at the National Hospital as a case of epilepsy, a very extensive thyroidectomy had been performed; there were no signs of myxœdema. There were very typical attacks of tetany, but there were also attacks in which loss of consciousness and incontinence occurred, which were very like attacks of "tonic" epilepsy. A calcium and parathyroid treatment brought about the disappearance of the symptoms in this patient. These events are in line with the experiments of Horsley with panthyroid extirpation in monkeys and with the parathyroid removals of Biedl, in which both tetany and epileptic manifestations resulted. The absence of the parathyroid element is now held to be responsible for these symptoms, which, so far as I am aware, have never been observed in any case of myxœdema.

Metabolic Disturbance as a Cause of Epilepsy.

I submit that there are many clinical features of epilepsy which argue strongly in favour of a metabolic disturbance as the essential cause for epilepsy.

1. In the first place there is the very common incidence in early infancy when the personal metabolism may not as yet be strongly organised, nor the developing brain highly stable, and the very important influence which so definite a metabolic disorder as rickets has, in determining the incidence of epilepsy. All great authorities are agreed that infantile convulsions often associated with rickets are the most important of all the known antecedents in idiopathic epilepsy which is personal and not inherited. There is, again, the incidence at the time of puberty when important metabolic changes may be presumed to

occur, and again, a small incidence in the degenerative period of life when metabolic regulation may be failing. Then there is the periodicity of epilepsy with its often amazing regularity, the attacks occurring always at night or at regular intervals, or only at the menstrual epochs. And, more strikingly, those cases in which batches of fits at long intervals occur—sometimes many in a day—and during the long intervals nothing will induce the patient to have a fit. Surely such periodicity is more reasonably explained on the grounds of a metabolic dyscrasia—now present, now absent, than upon any other hypothesis which has been advanced.

2. It is usual for the epileptic woman to have complete immunity from the attacks during pregnancy, and I submit that this fact can only be explained on the basis of the correction of a faulty metabolism in the mother by that of her fœtus. The cessation of epileptic attacks during pregnancy is not confined to idiopathic epilepsy, but it has occurred under my observation in many cases of epilepsy from local organic disease of the brain, and I have also seen several cases in which the epileptic manifestations of local lesions of the brain have appeared directly after the termination of pregnancy, as if the pregnancy had held these symptoms back. I wish particularly to emphasise this point, for I shall attempt to argue later on that there is metabolic dyscrasia present as a second factor in every case of organic lesion of the brain which presents epileptic manifestations. On the other hand, it is common knowledge that epilepsy may occur only during pregnancy and with repeated pregnancies, and this form, I think, surely belongs to the class of eclampsias due to anaphylaxis from fœtal products.

3. Status epilepticus is, in my opinion, only explicable on the grounds of an acute autotoxic process. It closely resembles experimental convulsions from the exhibition of convulsant poisons, and it is very closely akin to the convulsions of uræmia and of eclampsia. It is the commonest event by which epilepsy in itself causes death. It arises sometimes in an epileptic subject who has had no fits for a very long time, and whose cerebral condition might therefore be deemed to be more stable than in the epileptic who has frequent fits. Sometimes over-exertion is the immediate exciting cause, sometimes the discontinuance of medicinal treatment by the bromides or other remedies. Sometimes no exciting cause can be attributed. The attacks begin and recur with increasing frequency and severity in spite of the apparent complete abrogation of cerebral function, and death is a common result, notwithstanding any treatment that may be adopted. Now I have in several cases of status epilepticus arrested the convulsions, restored the patient to consciousness and secured adequate nutrition, and yet death has occurred in a few days from exhaustion with a rising temperature and pulse-rate. It is most important to bear in mind that in these cases the autopsy showed the most acute and intense fatty degeneration in the cardiac muscle. So far as I am aware this change in the heart muscle is the invariable finding in status epilepticus, and this was emphasised by the late Sir Frederick Mott, who told me that in his rich experience he had never seen an autopsy upon any case of status epilepticus in which this condition of the heart muscle was not conspicuous. Such fatty degeneration must surely be the result of an acute toxæmia, which is at the same time the cause of the external manifestations of status epilepticus. It cannot be ascribed to an effect of continued convulsion and lack of nourishment, for the amount of energy expended from convulsion in status epilepticus in no way exceeds that put out by a labourer in a day's work, and is incomparably less than that which may be exhibited by an acute maniac, without sleep and without food, and without signs of myocardial disturbance even after many days.

It seems to me that there is another condition occurring in epilepsy to which the term "status epilepticus" should justly be applied. I have met with it only in epileptics who show mental deterioration. The patient, without cause, and perhaps after signs of increased mental aberration, becomes dull, ceases to take food, and lapses into coma with terminal pyrexia which ends fatally. This in reality is status epilepticus without the convulsions, and if the convulsive form be comparable with uræmic convulsions, then this second variety may be reasonably compared with uræmic coma.

4. It is a remarkable fact that the habitual epileptic person shows immunity from so many of the common diseases which are the plagues of the world—such as the specific fevers of childhood, tuberculosis, pneumonia, and carcinoma. And the epileptic shows this immunity in common with the subjects of infantilism, or of idiocy or of cerebral diplegia, in all of which diseases we have grounds for believing that a perversion of bodily metabolism is the essential cause. And this fact favours the argument that in the epileptic subject metabolic perversion is a fundamentally important factor. I suggest that the bodily peculiarities and the somewhat aberrant mental make-up which is seen in some habitual epileptic persons is the expression of this same metabolic error, and that the mental aberration, mental deterioration, and terminal dementia are results of the same process, either by way of deprivation of activators necessary for the maintenance of cerebral function or long-continued poisoning. The prodromal symptoms of the epileptic seizure—sometimes in the way of exaltation, excitement, and restlessness, sometimes expressed in headache, lethargy, and feelings of bodily illness—are surely the indications of some general bodily change which culminates in the paroxysm.

Mental deterioration, mental aberration, and terminal dementia occur only in some of the cases of epilepsy. In others the highest degree of mental attainments may be acquired and preserved throughout a long life. Nor does the condition of mentality bear any constant relation to the frequency or the severity of the epileptic manifestations. There is one clinical variety of epilepsy, for example, pyknolepsy, in which, though the attacks are of very frequent occurrence for years together, yet mental deterioration is said never to occur. I have seen many examples of this condition. On the other hand, there are many cases in which epileptic attacks, though mild and not very frequent, are followed by progressive and irrecoverable mental deterioration. Clearly, then, the epileptic occurrences are not responsible for the mental deterioration, but they must be the result of some concomitant metabolic fault akin to that which is supposed to give rise to the progressive mental deterioration in dementia præcox. It is an important fact that epilepsy is of common occurrence in dementia præcox.

Organic Epilepsy.

The occurrence of epilepsy in connexion with every conceivable variety of local disease of the cerebral hemispheres is a difficulty in the conception of a fundamental factor for epilepsy in a disordered metabolic state. This organic epilepsy has for the most been considered as something quite separate and apart from idiopathic epilepsy, and as having a different clinical aspect and ætiology, and requiring a separate description, and as amenable to surgical methods of treatment. This opinion, which is still widely held, has, I am sure, impeded the progress of our knowledge of epilepsy, for there is in reality no difference whatsoever between the clinical manifestations of epilepsy resulting from organic disease of the nervous system and those of idiopathic epilepsy. It is traditional at the National Hospital that when you, Mr. President, first took charge of the out-patient department there you discovered in a very short space of time a considerable number of cases of organic disease of the brain among the patients who had been passed by your predecessors as cases of idiopathic epilepsy. I suggest that you did not do this from any peculiar nature in the attacks which these patients had, but from your skill

in the use of the ophthalmoscope. I have myself personally observed every known feature characteristic of idiopathic epilepsy in cases of organic disease of the brain. I may here mention three examples of the more rare events. First, minor attacks. I have seen the most characteristic attacks of "petit mal" with momentary pallor and loss of consciousness instantly regained commence for the first time and recur frequently in the course of cerebral tumour, and in one case where the tumour was successfully removed from the right temporal region the attacks permanently ceased. Secondly, "myoclonus epilepsy" or "epilepsia continuans." This somewhat rare condition has been described as an idiopathic epilepsy with myoclonus superadded, and it has been called a disease "sui generis." Muskens has quite recently claimed that the myoclonus is not a very uncommon manifestation of idiopathic epilepsy, and with this opinion I entirely agree. The following case emphasises the occurrence of myoclonus epilepsy as symptomatic of a local lesion of the brain. There is at the moment of writing a young woman under my care at the National Hospital, who several months ago commenced to have local epileptic attacks, without impairment of consciousness, in the right foot and leg. Thereafter the right leg has developed a spastic paralysis which has increased to the extent that she can hardly walk. The usual signs of pyramidal tract involvement are present. The attacks occur only in the night. But all day long the muscles of the right leg are twitching just as one may see the muscles of a patient with uræmia twitch. The twitching does not extend above the iliac crest. Now and again the muscular contractions become more massive and the limb moves with the short shock-like movements which characterise myoclonus. The presence of an organic lesion of the brain, probably a neoplasm, is incontrovertible in this case, and that this lesion is responsible for the local myoclonus-epilepsy is also incontrovertible. So far as I am aware no case of this nature has hitherto been recorded.

Status epilepticus has not usually been included in the descriptions of the manifestations of organic epilepsy, if I may exclude the repeated convulsions which may occur in acute encephalitis and in general paralysis. But it may certainly result from local lesion of the brain. Quite recently a patient was admitted to the National Hospital as a case of severe idiopathic epilepsy of two years' duration. Meticulous and repeated examination did not reveal any sign suggesting that an organic lesion was present. The fits increased in frequency, and during the last 12 hours he had 60 fits, and there was no return of consciousness between the attacks, so that he was indeed in a condition of status epilepticus. At the autopsy a frontal tumour was found.

On the other hand, the peculiarity in the epileptic attacks which have been hitherto claimed as characteristic of organic disease of the brain, such as local commencement of hallucination or convulsion, slow spread or restriction of the disturbance to one region, with retention of consciousness are all common features of idiopathic epilepsy, notwithstanding the confident statements to the contrary which have recently been made by J. P. Martin and others. A majority of idiopathic epileptics have local fits at some other time or other. Some have occasionally the local aura which is not followed by the usual attack, others have occasional local convulsion, while in a few local attacks predominate.

As an example of the last condition, a child who was under my observation in the out-patient room at Queen-square for many years, showed us, on one occasion or another, during the few moments of her presence for examination, beautiful restricted attacks of Jacksonian convulsion, in one or the other side of the tongue, in either side of the face, in either shoulder or in either hand, in either side of the abdomen, and in either leg, both upper and lower. There was never any impairment of consciousness, and only on rare occasions had the convulsion become general. One gained a greater experience of local epilepsy from this one case that one would do from an average 200 cases of cerebral tumour. This patient recovered, and is now the mother of a growing-up family.

I have seen every conceivable variety of local attack, both sensory and motor, to occur in idiopathic epilepsy, and I am in the habit of teaching, perhaps too dogmatically, that the commonest cause of Jacksonian epilepsy is idiopathic epilepsy, but this actually is my individual experience. I have in former years assisted at operations for craniectomy in cases of Jacksonian epilepsy where nothing whatever abnormal has been found, and when subsequently the attacks ceased for ever, as often happens in local idiopathic epilepsy, either spontaneously or during the administration of the usual remedies, the case was claimed as a cure by surgical measures, though what the surgeon did besides introducing a few adhesions and a little scar tissue escaped me.

Epilepsy results only in a small minority of organic lesions of the cerebrum, whatever may be the nature of the lesion and whatever may be the situation of that lesion in the brain. With some lesions it is very rare indeed. In disseminate sclerosis, for example, though lesions of the brain, and very often of the cortex, are common, epilepsy does not occur in more than 1 in 500 of the cases. With wounds of the brain the subsequent incidence of epilepsy is in about 4 per cent. of the cases, according to the statistics of the Great War. In cases of cerebral tumour the incidence is less than 10 per cent., even with the rapidly growing endotheliomata that press into the surface and which seem to be the most epileptogenous of the lesions or with a localisation in the uncinate lobe, which seems to be the most susceptible region.

There is no lesion of the brain that will certainly produce epilepsy, whatever be its nature or position. There is hardly a lesion of the brain of any nature which has not produced epilepsy. Of ten tumours of the brain identical in nature, size, rate of growth and position, one produces epilepsy early and continuously, while the other nine do not. Of 20 similar wounds of the brain one is followed by epilepsy and the others are not so followed.

Obviously, therefore, it is not the lesion of the brain alone which is responsible for the epilepsy. There must be some other factor which, together with the brain lesion, can produce epilepsy. This second factor has been sought for in some peculiar irritating quality of the lesion, some weird potentiality for setting a train of gunpowder on fire, which, I submit, is picturesque enough, but too much derived from the effect of a pair of faradic electrodes upon the cerebral cortex. It has been sought in adhesions and tissue tractions and dislocations which might be remedied by surgical measures. But we have such good knowledge of the extraordinary degrees of tissue dislocation, traction and adhesion, which the brain will put up with without any epilepsy or, indeed, without any disturbance of its function at all, as in hydrocephalus, injuries to the brain, and adhesive meningitis. It has also been sought in the local liberation of poisons of a convulsant nature—choline, for example—from the decaying nerve elements in the region of the lesion. But epilepsy is no more constant in cases where we may presume such decay to be occurring as with others in which the likelihood of decay is remote—cerebral agenesia, for example, and in such diseases as progressive muscular atrophy, in which we know well that progressive decay of the elements of the ascending frontal convolution is proceeding rapidly, epilepsy is unknown. When listening to Sir Percy Sargent's presidential address upon the causation of epilepsy from local lesions of the brain a few years ago, I could not help feeling that he was very ably saying the very last word in support of an utterly lost cause.

I submit for your consideration that the second factor which we are seeking for as the cause of epilepsy from local lesion, since the local lesion of itself seems impotent to produce epilepsy, is in reality the same disorder of metabolism which I have theorised as the

fundamental cause of idiopathic epilepsy, but existing in minor degree, so that there are no spontaneous outbursts until the local lesion of the brain is added—a sort of potentiality of chemical make-up which favours the occurrence of epilepsy, great in those who are frank epileptics, less but present in varying degrees in those who develop epilepsy from local lesions of the brain, or in connexion with general diseases and intoxications, or in connexion with such cardiac derangements as heart-block and paroxysmal tachycardia, and absent in a great many who will not, however provoked, show epileptic manifestations.

This idea of the unity in cause of idiopathic epilepsy, organic epilepsy, and symptomatic epilepsy which I have thought about for some years has recently received some support in the experimental work of Dandy and Elman at the Johns Hopkins Institute at Baltimore, who set out to determine whether localised injury of the brain rendered cats more susceptible to toxic convulsions and whether the site of injury had any important bearing upon the nature of the convulsion so produced. The injuries employed were local cortical and subcortical extirpations, simple incisions into the convolutions, and the embedding of small foreign bodies locally beneath the cortex. Several weeks later, when the wounds had healed and the animals were in perfect health, a 10 per cent. solution of wormwood oil was introduced into the stomach by tube in exact doses. These authors found that one-third to one-seventh of the dose of the wormwood required to produce convulsion in normal cats would excite attacks in the animals which had a lesion of the brain. Injuries to the central convolutions were found to be much more potent in rendering the cats susceptible to the absinthe convulsions than were lesions of the occipital lobes, yet lesions in any part of the cortex were in some degree effective. A minimal convulsive dose produced unilateral convulsion corresponding with the side of the brain injured and without loss of consciousness, and when they had the luck to hit on exactly the right minimal dose the convulsion remained strictly local. With the small doses necessary to produce convulsions in the animals with cerebral lesions, the general absinthe effect of restlessness and irritability working up to the convulsions and which was always present in the normal cats, was never observed. These experiments show that a local lesion of the brain not in itself epileptogenous, can in conjunction with a disturbing agent in the general bodily circulation, again not in sufficient dose to be epileptogenous, produce both local and general epilepsy. And that is the proposition which I have placed before you as a possible explanation of epilepsy as occurring from local disease of the brain.

Symptomatic Epilepsy.

May I now draw attention to those happenings, usually called convulsions, which occur in so many conditions of bodily disease, from the convulsions of infancy and those which may usher in acute infections and which seem interchangeable with the condition of "rigor," to the nervous manifestations of uræmia, eclampsia, and tetany, premising on high authority that there is not one example of such convulsion which has not continued in some recorded case into an established epilepsy. With these convulsions you will find, on occasion—I will not say commonly—most, if not all, of the clinical phenomena which characterise epilepsy; major attacks and minor attacks, local attacks and general attacks, auræ, sensory and motor fits, and post-convulsive paralysis. Sometimes the clinical picture *qua* epileptic manifestations is indistinguishable from epilepsy proper. How many times has a patient been treated for years, and with success, as an occasional epileptic, when the first appearance of hæmaturia has led to a correct diagnosis of cystic disease of the kidneys. At least ten times in the O.P. room at Queen-square has a child been brought to me with a story that would have passed as characteristic of idiopathic epilepsy, when either the anæmic appearance of the patient or a finger placed upon the pulse or a look at the fundus oculi has changed the diagnosis to one of Bradford's kidney.

There is at the present time in one of my beds at Queen-square a man who has had epilepsy for many years with much mental deterioration. His fits are general and occur but rarely—they never have been frequent. His muscles twitch continuously night and day in a manner characteristic of the uræmic state. There is no uræmia, but the phenomenon is identical and the cause must be nearly allied. It is called "epilepsia continuans." Similar twitching of muscles as an occasional phenomenon is, however, very common in epileptics. It may herald an oncoming attack or may occur without reference to the other epileptic symptoms.

I submit that since a train of phenomena sometimes precisely, and at other times closely resembling those of epilepsy, is well known to occur from disordered nutritional states, interference with important organs of metabolism and from infections and intoxications, all of which are productive of metabolic dyscrasia, it is a fair argument that all epilepsy may be similarly caused and that symptomatic convulsions and other epilepsy-like manifestations should be included in descriptions of epilepsy, the more so because any of the latter may persist after its apparent cause has disappeared as an established epilepsy.

THE RATIONAL USE OF DIGITALIS.

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Authorities agree that digitalis is a valuable drug in the treatment of disorders of the heart, but much confusion and contradiction exist as to its actions and the type of case in which it should be employed. Yet in all cases there is one constant factor, and that is the action of the drug; this does not change. The varying results obtained from its use are mere expressions of the fact that different conditions obtain in the various cases, the drug-action being a constant. A study of these varying results illuminates the subject and clearly indicates the rational use of the drug.

Without some conception of the laws governing the living cell all therapeutic measures are empirical. It was to this problem of the living cell that Sir James Mackenzie gave the last few years of his life. He evolved the following simple conception[1] of cell activity, based upon a study of the less complex biological forms. He considered that the vital process in a living cell is that of the alternate discharge and renewal of its energy. This principle applies to all cells, whether they be highly specialised such as the polygonal cells of the liver, or humble supporters in connective tissue. The characteristics of the cell are fixed, and no agent can effect a change in them. On the other hand, the rate of activity of a cell, or the process of discharging and renewing its energy, is variable and liable to influence from without. The activity of a cell is coördinated with somatic requirements through specialised paths known to us as nerves, and the stimuli transmitted by nerves act by either delaying or quickening the process of recovery in the cell. Stimuli are identical and in no way specific, nor can they interfere with the characteristics of the cell they control. Drugs, in a like manner, act only by delaying or quickening the process of recovery in the cell.

The Heart.

In the heart there are three elements concerned in the rhythmic cycle—the nerves, the genetic system, and the myocardium. The genetic system is a term applied by Mackenzie to the conducting

[1] Sir James Mackenzie: Diseases of the Heart, fourth edition.

system, to stress the fact that this system does not only conduct, but also originates stimuli (see figure). Rhythm is an inherent property of this tissue, even when excised. The genetic system begins near the great veins at a node known as the sino-auricular node. This is connected with a similar node in the junctional tissue known as the auriculo-ventricular node. Thence the system is continued as the bundle of His, which runs in the septum of the ventricles, eventually losing itself in the cardiac muscle-fibres. The sino-auricular node is the most sensitive part of the genetic system and sets the pace in the normal heart. To a lesser degree the auriculo-ventricular node possesses the same faculty, and when the continuity of the system is interrupted between these two nodes the auriculo-ventricular node originates the stimuli. When a lesion lies distal to the auriculo-ventricular node the bundle of His originates the contraction. Such a condition is known clinically as complete heart-block. The genetic system may be termed automatic, but there are two controls which coördinate the work of the heart with the requirements of the body. These controls—the sympathetic and the vagus nerves—have an opposite action; the sympathetic is an accelerator and the vagus a depressor. They are connected to both the nodes, but the more highly specialised sino-auricular node is the main channel through which the stimuli pass. When the body is in exercise, the heart quickens in response to the stimuli through the sympathetic affecting this node. In sleep the heart is slowed by a similar action operating through the vagus. The third element concerned in maintenance of the rhythmic cycle of the heart—the myocardium—is the most important. The myocardium differs from the other muscle structures in that there is a continuity between its fibres, making it thereby more or less one unit. The association of the terminals of the genetic system with the myocardium is much more intimate than that found in any nerve-muscle system elsewhere in the body.

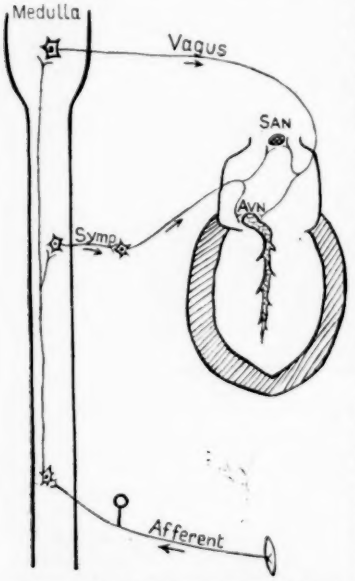

Diagram showing innervation of heart (modified from Sir James Mackenzie). Symp. = sympathetic fibres. SAN = sino-auricular node. AVN = auriculo-ventricular node.

Such are the elements concerned in the cardiac cycle. The rational use of any drug can only follow from a study of these elements in their interdependence in producing a flawless organ.

Digitalis.

The action of this drug has been described as multiple. Some text-books state that: (1) it slows the heart; (2) lengthens diastole; (3) acts directly on muscle-fibres and strengthens their contractions; and (4) increases peripheral resistance and thereby raises the blood pressure. Even a diuretic action has been attributed to the drug.

A second school of thought considers that the action is singular and that the drug acts by virtue of its property of stimulating the vagus. This, I think, is correct, since all the effects of the drug can be traced to this simple action. Stimulation of the vagus slows the heart and this increases the force of the next beat, the circulation moves more forcibly, and the blood pressure rises. The results of this increased efficiency are felt in all organs, and direct evidence is seen in the increased secretion of urine and the diminution of œdema. It is significant that clinically the presence of œdema is essential to the diuretic action. Strong support is obtained experimentally for this hypothesis. When the vagi are divided, no action of digitalis is obtained. The site of action is presumably the central termination of the nerve, for atropine, which paralyses the vagus, does not prevent the slowing effect of digitalis. It is interesting to note that division of both nerves does not affect the atropine action, and it follows that the site of action of the latter drug differs from that of digitalis in that it lies at the peripheral end of the nerve.

If the sole action of digitalis is to slow the heart, it follows that there is one indication only for the use of digitalis and that is in rapid hearts. I use the words rapid hearts in preference to tachycardia, for that suggests to many a standard of rapidity in the vicinity of 150 or more beats to the minute. At first sight this statement may appear to restrict unduly the field of therapeutics for digitalis, but a second's thought will make it apparent that the field is extremely wide. Heart failure with a slow heart is not an uncommon occurrence, but is usually beyond the reach of any drug. To administer digitalis in such a case is to invite a further degree of heart-block. Bradycardia is generally recognised as a strong contra-indication to the use of digitalis. In confining the use of digitalis to an action on the heart-rate no restriction is implied on hearts showing arrhythmia, but no direct action on the irregularity is likely to occur except where this is due to vagal influence. Where the disappearance of an irregularity which has its origin distal to the vagus-ending follows the use of digitalis the result is probably due to the improved cardiac circulation in the heart itself.

Rapid Hearts.

Rapid hearts can be considered in two groups—where the origin of the rapidity is outside the heart, and where it arises within the heart. Extracardial rapidity usually arises from stimuli conveyed by the sympathetic. Examples of this group are to be found in febrile conditions and constitutional disorders. Heat itself, when applied to any part of the genetic system, even when the latter is excised, promptly increases the rate of contraction. The rapid heart in a fever may be due to this, but more probably it is due to central stimulation of the sympathetic. Fever means increased metabolism, which demands a more rapid flow of blood through all organs. In such cases the slowing action of digitalis is not obtainable. It would require an extremely potent drug-action to negative such a persistent stimulation of the sympathetic as that which occurs in a fever. It is common to give digitalis in pneumonia, but the typical digitalis effect is rarely if ever obtained. Certain authorities declare that it does not act at all, and it is certainly difficult to find any concrete evidence in support of so widespread a practice. Graves's disease provides another example of extracardial rapidity. Practically the whole of the signs in this condition indicate stimulation of the sympathetic. Again the failure of digitalis to effect any definite change in the heart condition is noteworthy, and is generally recognised. Further observations on this extracardial group of "rapid hearts" requires to be made before the value of digitalis can be rightly assessed. In the light of our present knowledge it would appear that the extra stimulation of the sympathetic in response to abnormal demands of the body—i.e., increased metabolism—is more powerful than the counteraction of any drug we possess.

The essential feature in the other group is the excessive vital activity in the cells of the genetic

system, especially in the nodes which originate the stimuli. On theoretical grounds a rapidity due to increased vital activity in the genetic system should respond well to any drug which can produce a decrease in this vital activity. This may be accomplished by action directly on the cells in situ or by stimulation of the vagus, the physiological function of which is to delay the process of recovery in the cells of the nodes. In digitalis we possess such a drug, and its rational use depends upon the recognition of these two groups of rapid hearts. In the extracardial type digitalis is of little use, probably because the rapidity results from a strong physiological stimulus of an essential nature. In the intracardial type the rapidity arises from a local cause. In this group neither the vagus nor the sympathetic is involved directly, and both may be said to be open to occupation by any drug possessing a specific action.

During an afebrile period the toxic hearts of rheumatic infection frequently exhibit a pulse-rate of 110–120 and a regular action. The cause of the rapidity lies within the heart. Dr. G. A. Sutherland [2] was the first to direct attention to the excellent results obtained from digitalis in these cases. In six cases the pulse-rate fell from 125 to 85 in three days. The benefit which arises from saving 40 beats a minute over a few weeks in a toxic heart can hardly be over-estimated. The action of the drug appears to be a simple depression of the sino-auricular node, and to a lesser extent probably the auriculo-ventricular node.

Auricular fibrillation can be divided into two groups—the slow and the rapid forms. In the slow form there is no indication for interference with digitalis. When the irregularity has been established for some time and the pulse-rate remains in the vicinity of 80, signs of circulatory deficiency may be entirely absent, and the patient may lead a useful life for years. On the other hand, a deficient circulation accompanying a slow pulse indicates a marked degree of myocardial degeneration, and the prognosis is usually extremely grave. Digitalis can bring no relief. The essential feature of auricular fibrillation is the absence of the normal sinus rhythm. This is replaced by multiple stimuli which are conducted by abnormal paths. The result is that the auriculo-ventricular node becomes subject to a bombardment of stimuli in such rapid succession that only a few stimuli are effective and the ventricles contract in response to these. Where the node is very sensitive the pulse-rate will be very rapid, and the recovery period in the cycle of ventricular contraction will be greatly reduced. Under such conditions myocardial exhaustion is only a question of time, and digitalis is of extreme value; the sensitivity of the node is greatly reduced and more stimuli are blocked. The effect resembles the conversion of a stopping train, which permits entry at every station, into a long-distance train which permits entry only at long intervals. The rate of the ventricles is reduced, but the auricles continue to fibrillate. Occasionally the fibrillation ceases; this is not due to any direct action of the drug, but is probably attributable to the better circulation in the myocardium. In this respect it is well to recall the fact that the myocardial circulation is at a maximum during diastole.[3]

Digitalisation of the Heart.

This term is employed to express the condition present in the heart when the full effect of the drug is produced. The amount of drug required to effect this is known, with variations in individual cases. Until digitalisation is established benefit is not obtained. Unfortunately the margin between toxicity and therapeutic action is small, and herein lies one of the chief difficulties of the effective use of the drug in general practice. The difficulty is real but, with regular supervision, it is not insurmountable. American writers have asserted that 15 c.cm. (3 drachms) of the tincture per 100 lb. of body-weight is sufficient to effect digitalisation. To maintain this about 20 minims a day is required, for this figure represents the daily destruction and excretion of the drug by the tissues of the body. Thus it is possible to employ relatively large doses of the drug, based on body-weight, until the required concentration is reached. Digitalis is completely absorbed by the stomach in six hours, and it is rational to give the drug four times a day until the therapeutic action is reached. Massive dosage is seldom required, nor is the intravenous route, as with strophanthin. Intravenous administration should be reserved for cases of great emergency, for the early symptoms of toxicity—i.e., headache and vomiting—which accompany oral administration are lacking. The procedure of digitalising the heart is as follows. A fresh tincture should be employed or, better still, the pure active principle such as digitalin (that made by Nativelle is very reliable). In adults it is quite safe to give a drachm of the tincture daily for two days, then 45 minims a day for the next two days, by which time the required concentration of the drug is not far distant. At this stage great care must be taken and constant inquiry into the patient's well-being should be made. The drug should be continued in doses of ℿx thrice daily till the pulse-rate falls to about 70 or 80 beats per minute, and before each administration inquiry should be made for toxic symptoms. Not infrequently the pulse will be found to assume a peculiar rhythm, which at first may cause alarm. This is due to the introduction of extrasystoles which may occur every third beat or oftener. The effect is coupling or tripling of the beats. Such a phenomenon indicates that the drug should be discontinued for the time being. As a rule the pulse becomes quite regular in a day or two.

Failure to effect digitalisation arises in many cases from a lack of appreciation of the fundamental action of the drug. An essential preliminary is the absence of undue stimulation of the sympathetic. Many subjects react with extreme facility to slight excitement, and the heart-rate increases through sympathetic stimulation. Simple isolation in a quiet room is usually effective. If the pulse-rate remains rapid despite this precaution, a thorough examination of the patient may lead to the discovery of some metabolic cause for the rapid heart. The case then falls into the group of extracardial rapid hearts, in which digitalis is of little avail.

When the heart is digitalised the precise dose required to maintain the control must be found. In the adult 20 minims of the tincture a day is usually sufficient and, with this amount, the slowing effect can be maintained indefinitely. In the typical case of failure of the circulation in the absence of fever the benefits quickly become apparent. The distressed breathing disappears, œdema subsides, and the urine increases in quantity, and the whole outlook of the patient returns to a happier state. The digitalised heart is of great interest. The site of maximum stimulation appears to be the auriculo-ventricular node, and this in effect amounts to a partial block to stimuli arriving from the auricles. The normal reciprocal innervation by the sympathetic and vagus is suspended and we have a heart dominated by the vagal side. In other words, the heart is no longer capable of fine adjustment to somatic requirements through sympathetic influence. Complete heart-block means the absolute isolation of the heart from coördinate output of blood in response to the demands of the organs. The digitalised heart behaves differently, in that the depression of the node is not due to interruption of the somatic nerve connexions, but to an excessive vagal action which is inhibitory. In effect the condition resembles a mild degree of heart-block. The analogy between the digitalised heart and one showing complete heart-block is striking. In complete heart-block the pulse-rate is constant and remains so, regardless of whether the body is in exercise or at rest. The output is a constant and is incapable of increase. When the patient exceeds his cardiac capacity insufficiency of the circulation

[2] G. A. Sutherland: Quart. Jour. of Med., 1919, xii., 183.
[3] G Bourne: THE LANCET, 1926, ii., 491.

becomes apparent. If exercise is carried further, blood accumulates in the muscles in action, the brain becomes anæmic, and he falls unconscious. As a rule these patients are well aware of their cardiac capacity and take no liberties. To a mild degree similar conditions obtain in the digitalised heart. The normal increase of rate in response to exercise is present only to a slight degree. In the normal subject the act of swallowing slightly slows the heart-rate. Under digitalis and in complete heart-block this action is absent.

Toxicity.

Toxicity arises from excessive stimulation of the vagus. The ideal action of the drug is obtained when the cardiac branch alone is stimulated. Drowsiness, headache, nausea, vomiting, and diarrhœa may occur —actions which are all attributable to stimulation of the other branches. Any of these symptoms preclude the further use of the drug for the time being. One dose too much may turn success into failure, hence the importance of rigid supervision of the administration. In the majority of reported cases, which have died under the influence of digitalis, either the drug has been continued in full doses after the slowing effect was obtained or the case showed a slow pulse prior to treatment. With our fuller knowledge and appreciation of the nature of the action of the drug such fatalities should be extremely rare.

Indications for Digitalis.

Heart failure with a slow pulse is not uncommon, but it is a combination which is almost invariably fatal and beyond the aid of any drug. Apart from sudden death—e.g., from heart-block—progressive heart failure is always myocardial in origin. When the circulation begins to fail, the needs of the various organs become clamorous. The dire necessity in each organ for a greater turnover of blood makes itself known to the heart through the sympathetic fibres and the rate increases. The ultimate appeal is to the myocardium. If the latter is so degenerate that no response by increase of rate occurs, the outlook is hopeless from the outset, and it is obvious that no benefit can be derived from further slowing of the heart. The ideal drug in such a case would be one possessing an action of augmenting the strength of the heart-beat. Unfortunately, there is no proof that we possess a drug with a direct action on the strength of myocardial contraction. More commonly, however, the call for more blood is met by an increased rate of heart action. As a rule the increase in rate precedes the signs of failure, and it is the continuance of this rate which leads to exhaustion of the myocardium. The increased rate decreases the efficiency of heart-beat by shortening the period of recovery or renewal of energy in the cell. The rôle of digitalis in such a case is to isolate the heart from the influence of the sympathetic by increasing the influence of the vagus, which acts as a depressor. The result is a slowing of the heart and a lengthening of the diastolic or recovery period. Such a heart is to all intents beating to supply its own circulation, and this is mainly diastolic. The insistent calls through the sympathetic from the various organs are ignored. Slow powerful beats replace the weak rapid ones, the output is augmented considerably, and gradually the whole body recovers. Myocardial rest is the fundamental principle in this process of recovery. When heart failure is accompanied by increased metabolism, as in a fever, the slowing effect of digitalis is seldom obtained, the drug action being too weak to counteract the excessive sympathetic stimuli.

Rapid Afebrile Rheumatic Hearts.—As already stated, an increase of rate in most cases precedes the signs of failure of the circulation. An appreciation of this fact has led to the employment of digitalis in the early stages to preclude the failure which must inevitably follow a prolonged rapid action. Such an opportunity arises in the afebrile rapid heart of rheumatic infection. It is therefore a rational procedure to place such a heart under digitalis and to maintain this effect till the myocardium has recovered its tone and the rate has returned to normal.

The Tachycardias.—In true tachycardias—e.g., paroxysmal tachycardia and auricular flutter—it must be admitted that the action of digitalis is by no means constant, nor are the results reliable. Occasionally it will be found that slowing action is obtained; in others it fails completely or induces irregularities such as auricular fibrillation. The varying results are but expressions of the fact that the conditions are little understood. The inconstancy of the results of administration of the drug appear to indicate that the causes of these tachycardias differ and the sites of origin vary in individual cases. The drug should be tried in full doses, but in the present state of our knowledge the procedure must remain empirical.

Auricular Fibrillation.—The association of digitalis with auricular fibrillation is so familiar that at times it is forgotten that the drug does not cure by any direct action. Failure to secure the desired effect arises from neglect of this fact. The successful cases are those where the fibrillation is accompanied by a rapid heart action, and the converse is equally true; unsuccessful cases are those where fibrillation is accompanied by a slow pulse. The latter cases are more chronic as a rule, the bradycardia being due to myocardial degeneration in most instances. Given a suitable case—i.e., one with a rapid heart-rate—success should be the rule if the drug is administered correctly. A common source of failure lies in insufficient dosage; more failures are due to this than to overdosage. With adequate supervision, digitalisation is practically free from danger.

Digitalis has been found of great practical use as an adjunct to quinidine therapy.[4] Quinidine is the only drug known which possesses a direct action on auricular fibrillation. In some 50 per cent. of cases of fibrillation it is comparatively easy to re-establish the normal sinus-rhythm, but to maintain this state for sufficient length of time to confer a real benefit on the patient is another matter. As a rule a relapse occurs in a very short time and the patient is in statu quo ante. The reason for this in many cases is to be found in the rate of the pulse, which is often considerably increased, and some degree of myocardial exhaustion is probably a factor in the return of fibrillation. Experience has shown that digitalis is much superior to quinidine in maintaining the normal rhythm after it has been re-established. In many cases the quinidine treatment has to be abandoned owing to the onset of ventricular tachycardia. The pulse-rate suddenly increases to about 160 beats a minute, and this is accompanied by much apprehension and discomfort. Further administration of the drug may lead to death from circulatory inefficiency. It is this unfortunate feature of quinidine therapy that has led many physicians to discard the drug entirely. Recently in America,[4] it has been shown that this tachycardia can be eliminated by first digitalising the heart and then proceeding to quinidine. The procedure in this combined treatment can be conveniently described in three stages. The first, stage begins with the digitalisation of the heart. This may in itself indirectly cause a return of the normal rhythm, thus eliminating the necessity for quinidine. The next stage begins within a day of the slowing of the pulse-rate, which should not exceed 80 beats per minute. Quinidine sulphate is now administered at regular intervals until the pulse becomes regular. When this object has been attained, digitalis is again given in sufficient quantity to ensure a steady pulse between 70–80 beats per minute. The maintenance dose should be continued indefinitely. The results of the combined treatment are decidedly better than those of quinidine alone, and my own experience of this dual method has been very encouraging. The administration of quinidine requires a careful study of the individual patient as well as a knowledge of cinchonism before it can be used with safety.

[4] H. H. Riecker: Amer. Jour. Med. Sci., 1925, ii., 205.

CHRONIC APPENDICITIS IN CHILDREN.*

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Not long ago I produced evidence [1] to show that in adults chronic appendicitis rarely occurs as a primary disease, and is generally the result of an acute attack, most so-called cases of chronic appendicitis being in reality atonic conditions of the cæcum associated with virginal ptosis. If these views were correct, one would expect to find that chronic appendicitis is much less frequently diagnosed in young children, for before the age of puberty there is but little difference in the build of the two sexes, and the changes of virginal ptosis have hardly become evident. It is true, as I have previously shown,[2] that occasionally young girls with ptosis will present symptoms somewhat closely resembling acute appendicitis, but such cases are relatively uncommon. Also, if this were a correct explanation it would account for the fact that I had found—I believe in common with most surgeons—so few cases of this variety in my series.

It is my custom to classify and index all my appendix cases as "acute" and "chronic." In the former group I include all gangrenous, perforated and acutely inflamed cases, while in the latter I include those with no active symptoms, even if they have followed late after an acute attack, those with distension, fibrosis, stricture-formation or external dense adhesions. Probably it includes a certain number in which the appendix was not really diseased but showed senile atrophy, or was involved in a Jackson's membrane due to a virginal ptosis. Of cases of appendicitis uncomplicated with other lesions there were 906 examples. Of these, 601 were classified as acute and 305 as chronic. Of the acute, 310 were males and 291 females, giving 50·8 per cent. males; very nearly an equal ratio. In the chronic there were 147 males and 158 females, giving 48·1 per cent. males, again very nearly the same frequency; but it is interesting to note that since visceroptosis has been recognised as a clinical entity, appendices only bound down by Jackson's membrane have not been included in the series of chronic cases. If I had included with this latter group 451 examples of visceroptosis which showed approximately an 80 per cent. frequency in females, the proportion of males in this group would have been approximately only 31 per cent. The difference is, however, seen most markedly when we investigate the frequency with which these two varieties of disease affect young children. I have divided these cases again into two groups, those over and those under the age of 14. In the acute group, of 601 cases there were 186 patients under 14, 106 of them being males and 80 females. This gives a percentage of 30·9 in children under 14. In the chronic group, of 305 cases there were, however, only 33 cases in children under 14; 17 of them were females and 16 males, thus giving a total of 10·8 per cent. When, however, we come to more closely investigate these 33 cases which are classified as chronic appendicitis, further points of very considerable interest emerge.

The cases were of the following varieties:—

1. *Following acute attacks.*—There were 17 cases where the operation followed a few weeks or, at most, a month or two after a definite acute attack which had subsided with careful medical treatment. In all, the attacks had been quite typical. In some, an abscess even had been drained, and in all very definite subacute inflammatory changes were found in the appendix. These cases, therefore, should more correctly have been included with the acute group and not among the chronic. They will thus alter the figures, so that of 618 acute cases 203, or 32·8 per cent., occurred in children, and of 288 chronic cases 16, or 5·5 per cent., alone occurred in children. They are, however, a very important group from a practical point of view, for if the assumption is correct that appendicitis in adults or in children practically always commences with an acute attack, it becomes of very great importance to recognise that such attacks are alarmingly frequent in young children, and that acute appendicitis still has a very high mortality among them in spite of the efforts of modern surgery. In children, also, it is a matter of very considerable difficulty to obtain an accurate history of such past attacks, and hence any short illness which is associated with severe pain and vomiting should be regarded with grave suspicion, more especially if it be followed by localised signs of appendicular trouble. I believe one of the most important factors in making a diagnosis of this condition is the fact that these attacks have been rare, or that there has been only one isolated instance. If the attacks have been very frequent I should be very dubious whether the pain was appendicular, for it is very difficult to believe, and my figures would support this view, that a patient could have ten or twenty attacks without perforation and a general or localised pus formation.

2. *Cases with enlarged mesenteric glands.*—There were in this group five cases where the only lesion found was a subacute or chronic inflammatory change in the mesenteric glands, and especially in those glands of the ileo-colic angle. The clinical importance of this condition in giving rise to symptoms which may closely resemble those of appendicitis has been discussed by Carson,[3] and more recently by McFadden.[4] Braithwaite [5] has laid stress upon the fact that the disease may be found in both adults and children, and that in the latter the symptoms may resemble either acute or chronic appendicitis. In the majority of my five chronic cases, the symptoms consisted of short, sharp attacks, often colicky in nature, although there was sometimes dull, aching pain in addition. The nature and source of the infection in these cases is doubtful, but the majority of investigators appear to hold the view that the glands are tuberculous, and that the source of infection is in the lower ileum. McFadden [4] believes that these glands are not enlarged in acute appendicitis. This has not been my experience, for in many cases of acute infection I have found them enlarged and inflamed. In the five cases, however, in this group the appendix was removed in all, but no pathological change was seen. If it be true that the change in the glands is tuberculous, the presence of an apparently healthy appendix would, of course, not absolutely eliminate it as the source of infection, for it is well known that tuberculous changes may occur in the cervical glands; and the tonsils, which are almost certainly the source of infection, may show either no change or only the presence of a few tubercle bacilli. Although the general belief is that these glands are tuberculous, and many of them are definitely proved to be so by pathological investigation, it is not certain that this is the invariable change, and, indeed, clinical evidence somewhat supports the opposite, for not uncommonly only one gland is found to be affected, and there is no evidence of tubercle elsewhere in the body. Whatever be the nature of the source of the infection, my opinion very strongly agrees with that of Braithwaite, that the appendix should always be removed, for even if not the source of infection, all doubt as to the presence of acute appendicitis will be removed in the event of another acute attack. It is, however, to be remembered that with such treatment the symptoms may not be cured, and after a short interval of freedom the attacks may recur as before. McFadden, in his figures, found that only 42 per cent. of cases were cured by appendicectomy, and, as he rightly says, it is doubtful whether all these were cured, as some were only followed for a period of six months.

3. *Cases of visceroptosis.*—There were five cases in young girls of 13 who had suffered from frequent

* Being a paper read at a joint meeting of the Section of Surgery and the Section for the Study of Disease in Children of the Royal Society of Medicine on Feb. 24th. (See THE LANCET, March 3rd, pp. 444 and 453.)

attacks of pain in the right iliac fossa and lower abdomen. They were all characterised by the fact that there had been a large number of attacks lasting only for a few days, associated with vomiting and pain, and in some cases even with pyrexia, but the condition did not progress. The last attack was in no sense more severe than the earlier ones, and although the attacks were frequent there was never any evidence of local tumour formation, although deep and superficial tenderness were often present. After removal of the appendix and division of the membranes and bands, the symptoms were for a time relieved, but they returned again later. In one case which clinically appeared to have been a typical example of chronic appendicitis with a year's history of frequent attacks, there was complete freedom for 16 months after the operation, but the symptoms then returned. This variety is not likely to give rise to so much difficulty in the diagnosis if it be remembered that it is only common in young girls, and even in them is rarely seen before the age of puberty. The important diagnostic points are the frequency of the attacks without progress and the absence of any inflammatory mass, even if an attack had persisted for some four or five days.

4. *Threadworms.*—There were four cases in which there had been mild attacks suggestive of appendicitis and in which, at operation, the appendix appeared to be slightly inflamed. In every case it was removed, and on section many threadworms were found within its lumen. After operation the symptoms ceased, and, although it is difficult to be certain that the presence of the worms could be held accountable for the symptoms, it seems permissible to believe that they might cause local inflammation and even absorption from the appendicular wall. Cases have been reported by other surgeons in which a segment of a tapeworm has been found in the appendix, but in my own group no parasite other than the threadworm has been discovered.

5. In two cases of the group no pathological lesion of any sort was found, but the patients remained well after operation, and it is probable, therefore, that some intestinal upset of a relatively transient nature had given rise to an erroneous diagnosis, and that the medical treatment, which of necessity had followed the operation, had led to a cure of the symptoms.

Conclusions.

An investigation of these figures shows, therefore, that acute appendicitis is an extremely common disease in children, patients under the age of 14 forming a high percentage of all cases affected with acute changes, nearly 33 per cent. of the total occurring in children. It is well recognised that this disease in children has a higher mortality and is more serious even in adults. This may be due to the fact that young children are less likely to notice their earlier symptoms, and that being prone to ill-defined stomach-aches the attack may be overlooked until it has reached a dangerous stage. Whatever be the reason, there can be no doubt that it is of the utmost importance to recognise these attacks and to carry out an operation at the earliest opportunity.

My own cases failed to reveal a single case of appendicitis chronic from the beginning, unless we consider as such those where threadworms were present in the lumen, and I am therefore left with the opinion that such a condition does not exist. The recognition of this fact is as important in children as it is in adults, but for a very different reason. In adults the majority of conditions diagnosed as "chronic appendicitis" are examples of visceroptosis, and the patients ought not to have their appendix removed, for they may not only receive no benefit, but their progress may be adversely affected. Indeed, they may be started upon a course of many abdominal operations. In children, on the other hand, the majority of patients diagnosed as chronic appendicitis are in reality suffering with acute lesions of this or some other viscus and ought to be operated upon without delay, and since acute appendicitis is in them so common and dangerous a condition, all cases of doubt should be operated upon rather than a tragedy be allowed to occur from neglecting an early case of acute inflammation. Many a child's life might have been saved if its appendix had been removed on suspicion.

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THE LATE RESULTS OF PULMONARY FIBROSIS.

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THE chronic pulmonary catarrhs of childhood form a pathological rubbish heap comparable to the "eczema" of the dermatologist and the "functional neurosis" of the neurologist. Thus the term "fibroid lung" is often loosely applied to a variety of conditions ranging from chronic catarrh to bronchiectasis, the child "with a weak chest" and the victim of one of the most horrible of all diseases being placed in the same category. The need for determining the relationship between the various forms of pulmonary fibrosis is apparent when we consider the claim of the surgeons that timely operation on early bronchiectasis may avert the tragedy of its graver manifestations.

Bronchiectasis is usually regarded as a disease. It should be recognised not as a disease in itself but as the late result of an inflammatory process. There can be no early case of bronchiectasis. We do not speak of early phthisis with cavitation. In both phthisis and bronchiectasis inflammation, degeneration, and ulceration must precede the formation of cavities. Bronchiectasis may develop rapidly, as in the case quoted by Osler in which well-marked dilatation of the bronchial tubes was demonstrated at autopsy six weeks after the onset of an attack of broncho-pneumonia. In cases of this kind preventive treatment is obviously impossible, but such cases are rare. Can we anticipate the occurrence of bronchiectasis in those cases of chronic interstitial inflammation of the lungs which form so large a proportion of the number of patients attending the out-patient clinics of urban hospitals? Is there any distinctive type of pulmonary infection of this kind which can be recognised as the precursor of bronchiectasis?

The chronic pulmonary catarrhs of childhood may be classified according to the extent of symptoms and physical signs. For practical purposes four groups may be recognised.

(1) *Chronic Pulmonary Catarrh.*—This group includes those cases in which an obstinate catarrh, usually confined to the lung bases, suggests that there is some permanent fibrosis. Though the signs clear at intervals they have a tendency to recur.

(2) *Pulmonary Fibrosis.*—These cases are similar to those of group 1, but the catarrhal signs never entirely disappear, are usually limited to the lung bases, and vary in extent and intensity from time to time. Some impairment of the percussion note is usually evident. Definite clubbing is seldom seen, but the skin over the dorsal aspect of the terminal phalanx, above the nail root, is usually slightly raised, pink and shiny. A measure of permanent fibrosis of the lung has probably occurred.

(3) *Fibroid Lung.*—In this group are included those cases of pulmonary fibrosis in which the increase in fibrous tissue is so great that the physical signs are those of solid lung. Breath sounds heard over the implicated area are weak and crepitations less evident than in group 2. Pleural effusion or pneumonia is often suspected. Contraction of the chest wall and cardiac displacement are accompanied by dyspnœa. Expectoration of sputum is the rule, even in quite young children. Clubbing is usually evident.

(4) *Bronchiectasis.*—In this group the signs and symptoms of bronchial dilatation or basal cavities are added to those present in group 3. The sputum is copious and fœtid, and hæmoptysis is common.

Is the condition noted in cases in group 1 an early stage of that found in group 2? In particular, will the sufferers from fibroid lung included in group 3 ultimately develop bronchiectasis? With a view to answering these questions an attempt has been made to trace the after-histories of children of 14 years of age and under who were admitted to the Victoria Park Hospital during the decennial period 1905–14 with the diagnosis of "fibroid lung." Out of a total of 167 cases 26 were traced. Of these 13 responded to an invitation to attend at the hospital, letters were received from 5, information was obtained by inquiry in 2 cases, and the death of 6 was ascertained.

The "admission period" chosen ensured that the survivors should have reached adult age, a minimum period of 13 years having lapsed since the date of discharge from hospital. The diagnosis at the time of admission had been fibroid lung, pulmonary fibrosis, or bronchiectasis. A careful study of the ward notes has been made, and from the condition on admission, the course of the disease while the patient was in hospital, and the condition on discharge, the cases have been allocated to the four groups described above. The cases have been reclassified according to their present condition as ascertained by recent examination, or by news lately received, and the deaths have been noted. The result as set out below does not pretend to scientific accuracy, but may serve as a guide to prognosis. It may also tend to qualify the zeal of those who, in a laudable desire "to do something," overlook the fact that a bad prognosis is not inevitable. It will be noted that in no instance has a case originally classed in group 2 deteriorated to group 3. Group 3 yields 4 deaths, and 2 apparent recoveries, while 2 patients are still alive and fairly well despite well-marked signs of fibroid lung, their present age being 28 and 29 years respectively. Of the 2 cases originally belonging to group 4 one has improved and is now placed in group 3, while one has died.

Summary of Cases.

In the following table the grouping is based on the condition of the patient at the time of discharge from hospital. The comment refers to the patient's present condition or death:—

Group 1.

Case.	Original distribution.	Redistribution as determined by present state.
(q)	..	Recovery.
(d)	..	Subject to winter coughs.
(m)	..	Recovery.
(p)	..	"
(r)	..	"
(v)	..	"

Group 2.

(a)	..	Group 2.
(e)	..	Recovery.
(f)	..	Group 2.
(l)	..	Recovery.
(m)	..	Group 2.
(t)	..	"
(u)	..	Recovery.
(z)	..	Group 2.

Group 3.

(b)	..	Group 2.
(c)	..	" 3.
(h)	..	Recovery.
(i)	..	"
(j)	..	Group 3.
(k)	..	Died. (Death attributed to pulmonary tuberculosis.)
(s)	..	Died.
(x)	..	"
(y)	..	"

Group 4.

(g)	..	Group 3.
(o)	..	Died.

Case (w) died of pulmonary tuberculosis which was probably the cause of the original catarrh.

Conclusions.

Opinions based upon a limited number of cases and upon histories which are incomplete cannot be accepted as final. The results of the present investigations suggest that (*a*) a diagnosis of post-pneumonic fibrosis is only justified when the physical signs of this condition are definite and persist over a period of some months. (*b*) When permanent fibrosis of a lung results from broncho-pneumonia, bronchiectasis is not an inevitable sequela. (*c*) Fibroid lung is compatible with fair health over a period of many years, provided that it is not associated with bronchiectasis. (*d*) These records, admittedly incomplete, support the general opinion that the prognosis of bronchiectasis in childhood is always grave and death before adult life is to be anticipated.

Note.—Since the completion of the above three more cases have been traced. One of these would fall into Group 2 and two into Group 3. Over 20 years have elapsed since one of the latter, a man now aged 31 years, was discharged from hospital. Despite a massive fibrosis of the left lung and extreme contraction of the chest wall he has worked as a docker during the last 12 years. He states that he remains free from any chest symptoms except for occasional slight cough.

MEDICAL DIATHERMY IN CHRONIC MIDDLE-EAR DEAFNESS.

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A RECENT experimental trial of medical diathermy in chronic catarrh of the middle ear has so much diminished the deafness and tinnitus that I draw attention to the method in order that others may try it. In this form of diathermy a beam of high-frequency current traverses the tissues between two electrodes and raises their temperature. It is solely to the rise in temperature that the therapeutic action of the remedy is attributed. For detailed information on diathermy, both medical and surgical, the reader is referred to Dr. Cumberbatch's book.[1]

Several methods of application to the ear have been proposed and carried out, but the following is that which I prefer, for reasons given later.

Method of Application Described.

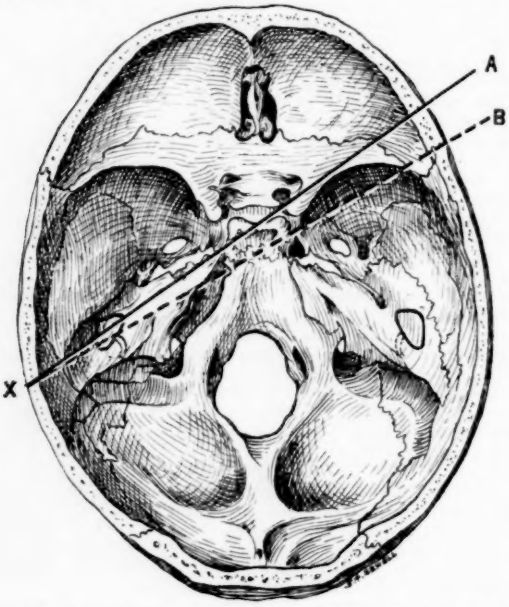
The electrodes used are made of metal, and are of the same size, their superficial measurements being 1 inch by 1½ inches. One is placed over the mastoid process, and the other is laid upon the face just below the prominence of the malar bone, or a little behind it. The position of the face electrode varies according to the shape of the head and that of the mastoid, the aim being to bring the two electrodes as nearly as possible into parallel planes. When I first began to use the diathermy current in ear disease I placed the ear electrode upon the auricle, but it was found that, in spite of careful padding, the irregular surface of the pinna made it liable to burns. The mastoid was therefore chosen. A pad of several layers of lint, thoroughly soaked in 10 per cent. saline solution, is interposed between each electrode and the skin. The patient should be lying down on a comfortable couch, and the electrodes may be strapped on with a rubber band and kept in position with suitable sand-bags, but whatever method be adopted the contact must be close, or sparking will occur and the skin may be burned. The current we use varies from 0·7 to 1·4 amp., according to the patient's feelings (and according also to the ampèremeter, for these instruments show variations in their readings). It is gradually raised from zero up to the point when the patient begins to feel the skin under one or other electrode becoming too hot; the strength of the current is then gradually reduced until the point of tolerance is reached, and it is kept there for from seven to ten minutes. After the current is shut off the patient should remain recumbent for a few minutes, as

[1] Diathermy. By Elkin P. Cumberbatch, London, 1927.

vertigo is sometimes experienced if he assumes the erect posture too quickly. The treatment should be repeated every other day. As a rule, I find that, if benefit is going to be received, the patient will become aware of an improvement in symptoms before the end of the second or third week. The treatment is painless if care be taken not to overheat the skin, but as this may occur unexpectedly a trained attendant should be at hand to regulate the current when necessary.

The application may be followed by a reactionary dulling of the hearing for 18 to 36 hours, but many patients fail to experience any reaction. An increase in loudness of the tinnitus may also be observed and may persist longer than the period of dull hearing.

With the electrodes in the positions described above, the current occupies the mastoid process, the middle ear and cochlea, the petrous bone and the Eustachian tube; then it crosses the middle line by the body of the sphenoid to pass by way of the floor of the orbit, the lesser wing of the sphenoid, and the body of the superior maxilla to the cheek (see figure).



Routes of diathermy currents. The triangular area on the petrous represents the tympanic cavity. The lines indicate the main direction of the current ascending to the position of the face electrode, but the current occupies a much wider tract than the lines represent.

After a current of 1·2 amps. had been passing for ten minutes, the temperature under the tongue and outside the region of the "beam" was 99·8° F.

(Current = 0·8 amp.) In the track of the "beam" in the mouth. Temp. = 98·4° F.

(Current = 1·2 amps.) In the mouth as before. Temp. = 100·2° F.

In the external auditory meatus close to the tympanic membrane. Temp. = 100° F.

Indications and Contra-indications.

The region of the current includes the areas which are implicated in tubo-tympanic catarrh, and one would therefore expect diathermy to be most serviceable in that class of case; the expectation generally seems to be realised. Again, in the deafness that lingers after an attack of acute suppuration of the middle ear, when the active disease has subsided, diathermy will be of service. On the other hand, in insular osteoporosis of the labyrinth, or what goes clinically by the name of "otosclerosis," one would scarcely anticipate any benefit from diathermy. Inasmuch as this disease in its pathological appearances resembles rheumatoid arthritis, for which medical diathermy has been used with considerable benefit, we ought perhaps in all cases to make a prolonged trial of the new remedy before deciding against it, particularly in those cases in which the diagnosis of otosclerosis is not quite definite. I can promise some agreeable surprises.

Generally speaking, the presence of pus, or at least an unopened abscess, is regarded as a contra-indication to the use of diathermy. For that reason it should not be employed in acute suppuration of the middle ear, if the membrane is still intact. It is also contra-indicated when hæmorrhage is proceeding or threatening, and so one would hesitate to use it in patients with the Ménière syndrome. Nevertheless, French writers claim successful results even in this variety of ear disease.

Results.

In favourable cases improvement in the hearing and diminution of the tinnitus takes place, and in one or two cases under my care the change in the hearing has occurred unexpectedly. In one instance, that of a medical man with increasing deafness of ten years' standing, the hearing for the tuning-fork at the meatus rose from minus 20 seconds to minus 10 seconds after the fourth exposure to the current, and the improvement continues. The effect on tinnitus has proved also to be full of surprises. In some it has at once become much less loud; and one patient lost her noises altogether. In others an unusual fluctuation in the intensity of the tinnitus was noticed; at one time it would become louder than ever, at another it would be so soft as to be scarcely audible. But the tendency in these cases also has been for the noises to become, as time has gone on, more and more subdued. When it is remembered how intractable tinnitus has proved to all former methods of treatment, this result will bring a sense of hope to all otologists and their patients. At the same time the diathermy made, or seemed to make, the tinnitus much worse in one of our patients. One must therefore be guided by results.

For how long a time the treatment should be continued also depends largely upon results. Thus in early, mild cases a few weeks of treatment will be sufficient, whereas we can scarcely expect to relieve old obstinate cases of middle-ear deafness for many weeks or even months. French workers [2] apply the current daily for two or three weeks at a time and then stop. They also use the semi-vacuum glass electrodes, inserting them into the external auditory meatus. The risk of burning the canal and perhaps also the tympanic membrane has hitherto deterred me from trying this route of application.

It will be gathered from what I have said, and I wish to emphasise the point, that the treatment is still in the experimental stage, but my experience of it has already been so unexpectedly favourable that I have no hesitation in recommending it to the attention of otologists as by far the most promising of all the recent plans proposed for the alleviation of "dry deafness."

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[2] La haute fréquence en oto-rhino-laryngologie, by Leroux-Robert, Paris, 1925.

BRISTOL GENERAL HOSPITAL.—At 3.30 P.M., on Friday, March 30th, Sir Thomas Horder will open the University centre of cardiac research. Tea will be served in the nurses' lounge.

LEEDS SCHOOL OF DENTISTRY.—Mr. J. H. Whitley, M.P., Speaker of the House of Commons, on March 16th, opened the new dental school and hospital which has been erected at a cost of £45,000 on a site adjacent to the Leeds Medical School and the General Infirmary. The site, valued at £8000, was provided by the General Infirmary authorities, and towards the total cost £6500 was contributed by the Dental Board of the United Kingdom and £2600 by the honorary staff of the school. It will provide accommodation for 150 pupils and students. To mark the occasion, the University of Leeds conferred the honorary degrees of Doctor of Philosophy on Mr. Charles Rippon, president of the British Dental Association, and of Master of Science on Mr. W. S. Thorburn, warden of the Leeds School of Dentistry, and Mr. Walter Marston, chairman of the clinical dental committee of the University.

A NOTE ON THE PATHOLOGY OF EPIDEMIC CATARRHAL JAUNDICE.

BY E. ATHOLE ROSS, M.D. CAMB., M.R.C.P. LOND.,
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EPIDEMIC catarrhal jaundice has lately been the subject of a report from the Ministry of Health,[1] and recent experience of epidemics in various parts of the country show that the disease is becoming more prevalent, although it has now been recognised in small outbreaks for many years. The following brief pathological note on some twenty cases which occurred in a public school is in no sense complete. It is published merely in the hope that it may be of some assistance to those engaged in future research on the ætiology of this disease. Since writing it I have received a private communication from Dr. Bruce Young, in which he advocates isolation of the patients and disinfection of their excreta, while Dr. C. B. Fuller informs me that he has attended one or two families in which nearly every member fell a victim to the disorder.

The cause of epidemic catarrhal jaundice remains obscure. Weil's disease (icterohæmorrhagic jaundice) is known to be due to the leptospira icterohæmorrhagiæ, and is a serious epidemic disease, while epidemic catarrhal jaundice is not dangerous. In 1923 Buchanan and Gulland recovered the leptospira icterohæmorrhagiæ from the blood and urine of some miners working in East Lothian, but their success has not been repeated by investigators of subsequent outbreaks. Weil's disease is transmitted by rats, which harbour the leptospira icterohæmorrhagiæ in their kidneys, and which convey the infection by contaminating food with their excreta. In the recent epidemic dealt with in Report No. 42, Major H. C. Brown, of the Wellcome Bureau of Scientific Research, failed to demonstrate a leptospira (except in one case which is open to doubt), in spite of a great quantity of material and very adequate laboratory resources. In view of the failure of so competent an observer to find leptospira it was decided to confine such investigations as could be made here to other possible causes. Sir George Buchanan (Report No. 42, p. 15) says: "I am inclined to the view that such mild jaundice epidemics suggest more a bacterial than a spirochætal infection." He also states that fresh material is being investigated with a view to discovering bacterial infection.

Information as to bacterial infection being a possible cause is at present meagre. The following references are to be found in Report No. 42:—

1. The blood of a child, who appeared to be a typical case, was found to agglutinate *B. paratyphosus* A to 1 in 80 (p. 13).

2. A paratyphoid agglutination test was found negative in five instances in convalescent cases. Two specimens of fæces showed no abnormal bacteria (p. 18).

3. Recently a bacillus (?) *B. asiaticus* (Castellani) was recovered from the urine of a convalescent on four successive occasions (p. 18).

Dr. W. A. Bruce Young, M.O.H. City of Winchester, has had experience at first hand of an outbreak of epidemic catarrhal jaundice which attacked some 50 children. Dr. Young read his paper on Epidemic Catarrhal Jaundice of Children to the local division of the British Medical Association and the Society of Medical Officers of Health in March, 1922. This paper contains a wealth of clinical detail, and the following points emerge:—

1. That November is the month of election for these outbreaks—a curious and unexplained fact. It is noted also that influenza is often very prevalent in November, and the question of connexion between the two diseases naturally arises.

2. That the victims were very generally of tender age and that the title Epidemic Catarrhal Jaundice of Children is justified.

3. That in these epidemics constitutional disturbance is more marked than in ordinary obstructive jaundice.

Following up Dr. Young's experiences it seemed desirable to find by blood examination what degree of constitutional disturbance was present, and also to see if blood examination afforded any indication for paratyphoid agglutination tests on any of the patients. White cell counts and differential blood counts were done on three of the patients, and four complete bacteriological examinations of fæces and one of urine were made. Owing to the common occurrence of nephritis in Weil's disease, the urine of four patients was tested to see if any connexion between epidemic catarrhal jaundice and the more serious disorder could be established.

Results.

(*a*) *Bacteriological examination of the fæces.*—Four patients were examined; all of them were found negative for streptococci, hæmolytic or otherwise. In the fæces of three no abnormal bacilli or other micro-organisms were found. In the fourth patient the findings were abnormal. A paracolon bacillus was isolated in pure culture and very few colonies of the normal *B. coli communis* were present on the plates. There was also a trace of pus and numerous bacilli in the urine, but the organism isolated here was *B. coli communis*.

(*b*) *Blood examinations.*—About 15 boys were treated in the sanatorium, while two or three others in various houses were confined to the house sick-room and not sent in. The matron informs me that at the onset the temperature was about 101° F., and the pulse was slow. In none of the four patients examined did the blood count reveal any marked constitutional disturbance. Only the fourth case showed a slight leucocytosis. This is of interest in view of the presence of abnormal bacilli in the alimentary tract, and of a urinary tract infection at the same time. These findings tally with the clinical observations of the medical officers, who report that none of the patients was seriously ill. These examinations were not in any way suggestive of the infective agent being a bacillus belonging to the typhoid or paratyphoid group, as no leucopenia was observed.

(*c*) In four cases the urine was examined for the presence of albumin and casts. In only one was evidence of a mild nephritis obtained.

Discussion.

1. This epidemic confirms the observation that for some unknown reason outbreaks of epidemic catarrhal jaundice are liable to occur chiefly in or about the month of November.

2. The average age of the patients was about 15 years. In this respect, therefore, the outbreak was not quite similar to the one previously observed.

3. There is present, especially at the onset, the constitutional disturbance to which Dr. Young has drawn attention. The blood examinations, however, seem to indicate that this is of but short duration, nor is the blood picture in any way suggestive of typhoid or paratyphoid infection.

4. In contrast to Weil's disease nephritis is slight or absent. It has happened to me in common with others to isolate an abnormal bacillus from the intestine in one case. It is evident that the only way to settle the question whether epidemic catarrhal jaundice is due to bacterial infection of the intestinal tract would be to make a complete bacteriological investigation of the excreta in every patient concerned. Possibly in some future epidemic the Ministry of Health would place one of their whole-time pathologists at the disposal of the authorities. It is also advisable to extend the search to the anaerobic group. The one or two anaerobic cultivations I undertook showed nothing abnormal. Some pathological investigation was made on more than half of the patients. Doubtless efforts to incriminate a leptospira will continue.

[1] No. 42. H.M. Stationery Office. 9*d*.

Clinical and Laboratory Notes.

A NOTE ON THE TREATMENT OF TUBERCULOUS DISEASE OF THE SPINE IN YOUNG CHILDREN.

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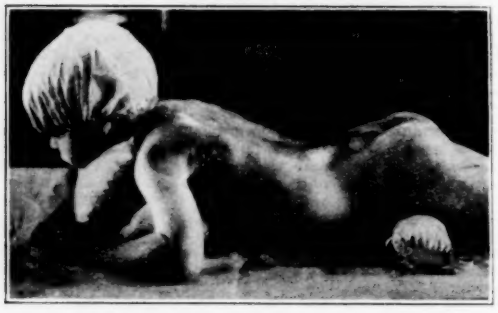
THE treatment of Pott's disease in children under 3 years of age presents certain difficulties over and above those encountered in the treatment of older children and adults. In infants especially it is often difficult to obtain the necessary immobilisation, owing to frequent movement for nursing purposes and by reason also of their inherent restlessness. The Carshalton frame, mounted on blocks on the bed, meets these difficulties satisfactorily, but it is expensive and has to be made separately to fit each individual, unless a large number of frames is kept in stock. Any satisfactory method of treatment must ensure adequate fixation of the child in the correct position in a comfortable form of apparatus; it should allow of free exposure of the body to the sun and, if possible, permit movement of the legs below the knees. Inasmuch as correction of deformity and reformation of diseased vertebræ is more likely to take place in young than in older children, it becomes of additional importance to provide an efficient form of apparatus. The writer has, for some years, found a plaster bed or boat, extending from the head to just above the knees, the most useful and satisfactory method of treatment in infants. The boat rests on wooden blocks screwed into the plaster and raised high enough above the level of the bed to admit a bed-pan without movement of the child. The raising of the boat has the additional advantage of permitting a considerable amount of movement of the legs.

FIG. 1.



The child in position.

Construction of the Boat.

The child is placed face downwards on a table with a wedge pillow under the chest and chin, and a small pillow under the pelvis if necessary. (Fig. 1.) The spine is thus slightly extended. The legs should be well abducted, as this facilitates subsequent nursing. The boat is then built up with wet plaster bandages, applied in the ordinary way to the previously oiled back of the child. It will generally be found convenient to have in readiness three or four "slabs" made of several thicknesses of folded plaster bandage to reinforce the lumbar and shoulder regions which rest on the blocks. It is important to see that the first layer of bandage is laid on smoothly without wrinkles, as this, of course, forms the inner surface of the boat on which the child lies. The bandages are applied at first transversely to the body and then longitudinally from the head to just above the knees. When the plaster has begun to set, the boat is lifted off the child's back (Fig. 2), a suitable opening is cut away in the anal region, and the edges are bound with a single layer of plaster bandage. When dry the inner surface may with advantage be given a coating of celluloid to render it less porous. The boat is then mounted on stout wooden blocks as described (Fig. 3).

FIG. 2.

The boat completed and ready to be mounted on blocks of wood.

In a properly constructed boat the child's spine will be slightly extended, and, if the aim is to "camouflage" the hump by producing compensatory spinal curves, a firm leather pad may be placed just above or below the kyphos as required. Should it be desired to open out the diseased vertebræ still further by hyper-extension, the pad may be placed directly under the apex of the deformity. It is not possible by this method to produce the high degree of hyper-extension effected by the Alton "back door splint" or the "push-and-pull" apparatus, but enough extension can be obtained to allow of re-formation and recalcification of diseased vertebræ. In the case of a child treated as described radiograms taken at an interval of 20 months show that the body of the second lumbar vertebra has re-formed from an indeterminate wedge-shaped mass into a fairly well-defined quadrilateral and, although it has not yet regained its normal thickness, there is little likelihood that any spinal deformity will recur.

The method is specially useful in caries of the cervical spine, since the head is fixed in an extended position by the head support and a light-weight extension may easily be applied if desired. In practice it is not usually necessary to move the child more often than once or twice a week, and with careful nursing the boat should last for three or four months. Fixation of the spine on a firm, unyielding support is thus secured. Towards the end of the period of recumbent treatment the boat is removed for a part of each day and the child placed on his face to encourage exercise of the back and thigh muscles and to allow the sun to reach the back.

FIG. 3.

Child lying in the boat.

Although no originality is claimed for this method it is suggested that it might perhaps be used more frequently in the treatment of caries in infants.

Summary.

(1) The technique is simple and the material required inexpensive. (2) Fixation of the spine in good position is secured, if the boat is made with the child in the correct posture. (3) The raising of the boat on blocks above the level of the bed simplifies nursing and avoids the necessity of moving the child whenever a bed-pan is used. (4) Children quickly become accustomed to the apparatus, and sore backs are almost unknown.

LOCAL FAT ATROPHY FOLLOWING INSULIN INJECTIONS.

BY E. ARNOLD CARMICHAEL, M.R.C.P. LOND., F.R.C.P. EDIN.,

AND

GEORGE GRAHAM, M.D. CAMB., F.R.C.P. LOND.

INSULIN may cause several forms of local reaction which are now well known. We have recently seen three patients who had a peculiar local atrophy of the subcutaneous fat. This seems to be a very rare condition and has only been reported by three observers, as far as we have been able to ascertain. Barborka [1] reported two cases and Depisch [2] five cases in 1926; Mentzer and DuBray [4] reported several cases in 1927. As the condition has not been described in this country, we thought that a short account of our findings would be of interest.

CASE 1.—A woman, aged 49, who had had diabetes mellitus since July, 1923, was given insulin in September, 1925. The blood-sugar fell to normal with ten units of insulin and her general condition has been very good. She has always given herself the injections in the left arm near the deltoid, and has not obeyed the direction which we give to patients—i.e., to vary the site of injection as much as possible. In April, 1927, she noticed some weakness in the left upper arm, but did not complain of it until August of that year. She said then that she had an aching pain in the left shoulder. On examination the left upper arm appeared much smaller than the right. The skin of the upper arm, just below the level of the insertion of the deltoid, was thin. Over an area of nearly 3 in. by 2 in. the skin could be picked up quite easily and there was an entire absence of subcutaneous fat, so far as could be judged by examination. A large vein was visible in this area; above and below it became buried out of sight in the normal subcutaneous tissue. The surrounding skin and subcutaneous fat appeared normal. There was no weakness of the arm muscles and no analgesia. An X ray examination of the shoulder-joint did not reveal any abnormal changes, although the patient complained of some pain on movement.

CASE 2.—A woman, aged 39, has had a mild form of diabetes ever since 1909. She was given insulin in May, 1924. Her general condition is now good. The blood-sugar is normal on diet and with insulin injections. She had definite local reactions with the English insulin to begin with, and had to have Eli Lilly insulin for a time. Later she was able to take the English insulin without any consequent local swelling. She has always used the skin of the front of the thighs for the injections. In May, 1924, she noticed a depression in the front of the left thigh. In September, 1927, she complained of a local swelling of the right thigh, but nothing abnormal was noticed at that time. In October, 1927, after the first patient had been seen, she was re-examined, and a well-marked depression was found on the front of both thighs. The skin could be picked up quite easily, and as the subcutaneous veins could be seen there was probably no subcutaneous fat present. When the skin was tested with faradic and direct galvanic currents goose skin appeared at once, showing that the skin itself was not seriously affected. No anæsthesia was present and the muscles all seemed strong.

CASE 3.—A boy, aged 8, has had insulin in small doses for two years. For the last three months the dose of insulin has had to be increased from five units up to ten or twelve units twice a day. The skin of the upper arms has been chiefly used for the injections, but also that of the front of the thighs. For the last three weeks a definite wasting of the right arm has been noticed; the skin below the level of the insertion of the deltoid is thin and there is apparently no subcutaneous fat. The muscles are unaffected. On the left side the same condition is present to a slight degree. The boy's mother thinks that the skin of the left arm has already begun to improve since the injections into the arms have stopped.

This condition of atrophy of the subcutaneous tissue may be due either to insulin itself, or to something which has been injected as an antiseptic. At hospital the needles are always kept in a mixture of lysol 1 oz. and methylated spirit 20 oz. in order to prevent rusting. The patients are instructed to wash the syringes out with six changes of cold boiled water. It seemed possible that the atrophy of the fat might be due to the injection of small amounts of lysol. The third patient, however, had never used lysol, as stainless steel needles had always been used and were kept in industrial spirit.

A fair number of patients have now been seen who have suffered considerably from local reactions; in none of these has local atrophy of the fat been observed. Only one of our three patients had any local reaction after the insulin injections. It is, therefore, improbable that the atrophy is connected with any of the usual local reactions. Insulin injections may cause toughness of the skin, so that sharp needles pierce it with difficulty. In the cases of fat atrophy the skin has not been affected in this way. It is also unlikely that it has been caused by involvement of the local nervous mechanism, either somatic or sympathetic. The entire absence of muscle wasting and anæsthesia excludes the somatic nerve, and the presence of the local pilo-motor reflex on faradic stimulation, according to Lewis and Marvin, [3] is in favour of an intact sympathetic system. So far as we are aware, a similar condition has not been reported after the repeated hypodermic injection of any other drugs.

Our observations, together with those by Barborka and Depisch of similar cases after insulin injections, make it almost certain that the condition is directly due to the insulin. It is possible that minute amounts of a fat-splitting ferment are present, as insulin is prepared from the pancreas. In the three cases we have reported, and in those of Barborka, the insulin had been injected too often in one localised area, with the result that changes in the subcutaneous fat have been brought about, presumably by the repeated minute doses of a lipolytic ferment.

The treatment would seem to be the avoidance of the same area of skin for repeated injections. It will be of interest to see if the fat returns, or if the damage is permanent.

References.

1. Barborka, C. J.: Jour. Amer. Med. Assoc., 1926, lxxxvii., 1646.
2. Depisch, F.: Klin. Woch., Berlin, 1926, ii., 1965.
3. Lewis, T., and Marvin, H. M.: Jour. of Physiol., 1927, lxiv., 87.
4. Mentzer, S. H. and DuBray, E. S.: California and West. Med. Jour., 1927, xxvi., 212.

DONATIONS AND BEQUESTS.—Mrs. Hannah McCulloch, of Bettwsycoed, left £2000 to the Bettwsycoed War Memorial Institute, and £500 to the Llandudno Cottage Hospital, and the Croesynyd Isolation Hospital.—The late Mr. Russell Allen, of Davenham Hall, Northwich, left £4000 to the Cheadle Royal Lunatic Hospital, Cheadle, Cheshire, £1000 to the Manchester Royal Infirmary, to endow a bed to bear the following inscription: "16th (the Queen's) Lancers Bed, in memory of John Edric Russell Allen"; £500 each to the Manchester Royal Eye Hospital, St. Mary's Hospitals for Women and Children, Manchester, and St. Dunstan's Hostel for Blinded Soldiers and Sailors.—The late Mr. George Chalmers, of Mooro Velho Villa, Nova de Lima, Estado de Minas, Brazil, left to the executors £500 for any institution for research work in cancer and £500 for any institution for research work in consumption.—Mrs. Emma Grace Caird, of Dundee, besides other bequests, left £5000 to the Royal Dundee Institution for the Blind, £20,000 to the Caird Jubilee Nursing Home, Dundee, and £1000 to the Helensbury Infirmary. Subject to other gifts, she left the residue of her property as to one-half to the Dundee Royal Infirmary, the income thereof to be applied for the benefit of that institution and the Sidlaw Sanatorium.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

A MEETING of this Section was held on March 16th, Sir HENRY GAUVAIN, the President, in the chair. A paper on the

PRESENT POSITION OF RADIUM THERAPY.

was read by Mr. A. E. HAYWARD PINCH (Director of the Radium Institute). He began by giving a brief account of the use of radium in surgical practice, from the time when, 32 years ago, Becquerel read his historic paper on uranium radiations, followed in 1898 by Madame Curie's discovery of radium. At first, he said, radium was used medically as a mild caustic, then it was enclosed in tubes for the treatment of easily accessible tumours. The results were encouraging, and there was now a very elaborate "surgery of access" for the purpose of treating tumours by irradiation. Prof. G. E. Gask, at St. Bartholomew's Hospital, had recently performed plastic resection of the front of the skull, and introduced a radium "seed" into the pituitary body, and Sir Charles Gordon-Watson did a modified Kraske operation to apply radium to a tumour of the rectum. This use of screened radium emanation seeds was the latest development of technique. The use of unscreened seeds had at one time been advocated, but they had been discarded at the Radium Institute as they caused a good deal of necrotic action and pain, and sepsis was a usual sequel.

The alpha rays of radium, said Mr. Pinch, could be left out of a medical discussion; the important ones were the beta and the gamma rays. 94 per cent. of beta rays were absorbed by 1 cm. depth of body tissues, and these rays were the best for the treatment of superficial lesions. Gamma rays were employed for deep radiation. The screens used at the Radium Institute were the following: 0·01 mm. aluminium when the action desired was on the true epidermis; lead of 0·1 mm. thickness for the upper layers of the corium; and silver 0·5 mm. thick, or for the deeper layers 1 mm. thick. By varying the time of exposure and the strength of the apparatus, any desired results could be attained. He showed slides to illustrate a case of lichenification of the skin in neuro-dermatitis, which was cleared up by radium applications after the patient had undergone nervous shocks. One case of circinate psoriasis he had cleared up by three exposures (on three successive days) each of three minutes' duration, using a flat applicator. There was no recurrence. Psoriasis of the glans penis yielded to radium when all else failed. Cavernous nævus cleared up after three half-hourly exposures on successive days, the treatment being repeated in six months. The screen used was 0·1 mm. of lead. Lupus was treated in the same way as cavernous nævus, but the seances were one and a half to two hours, repeated in six weeks. He showed photographs of a case of very severe facial burns, caused by petrol, which was restored almost to normal by irradiating the face, inch by inch, through 1 mm. of silver. Rodent ulcer, he said, could be divided into three main groups. In the first group—the hypertrophic cystic variety—the lesion rose well above the level of the skin. The second was the flat, superficial, cicatrising kind. The third was the deeply ulcerating form. This last was not as easy to cure as the other two; it was best to apply to them a small dose, unscreened, for one and a half hours. Mycosis fungoides showed a specific reaction to radium; he showed on the screen a case of it which was successfully treated by radium. Exposure was for one and a quarter hours.

Dealing next with gamma radiation specially, Mr. Pinch gave as his definition of deep radium therapy "the treatment of disease by prolonged exposures with radium or radon apparatus so screened as to emit a preponderant hard beta and gamma radiation, or gamma radiation only." The best screen for securing gamma radiation only was 1 mm. of platinum; this cut out all beta radiation, and transmitted 90·5 per cent. of the gamma rays. For large surface applicators, however, platinum was an expensive screening metal, and other metals could be substituted by using an appropriate thickness. For these large applicators lead was the metal used at the Radium Institute. The screening was entirely a physical action. He mentioned that because one doctor objected to screening by lead owing to its toxic action. Deep radiation could be carried out by using external applicators, either tubes or flat. Contact radiation could be employed, or "distance" radiation. The former was the chief method at the institute. For breast cases a square applicator was used, giving an exposure of 30 to 50 hours' duration, and 300 mg. of the radium element was employed, screened through 2 mm. lead. A disadvantage was that the secondary beta radiation, unless absorbed, would irritate the skin a good deal. "Cross-firing" was done to ensure a fairly uniform radiation to all parts of the growth; and it was particularly valuable for mediastinal growths. Distance radiation by radium was carried out a good deal on the continent, but it required a large amount of the salt, owing to the law of inverse squares. "Collar radiation" was used in the case of glands in the neck, with a mould of wax compound 3 cm. thick.

There seemed to be two schools in regard to methods of application: that which favoured using small quantities for a long time, and that which preferred large amounts and a short exposure. The speaker used both methods, as each had its special value according to the kind of case. Such conditions as periosteal sarcoma and splenomegaly responded best to a large dose applied for a short time. The other method was best for slow-growing squamous-celled endothelioma. He had been much impressed by the efficacy of the burying of screened emanation "seeds," as first carried out in America. Much less damage was involved in reaching a growth, and they could be inserted under local anæsthesia. If they happened to be left in situ they did not corrode nor do any harm. This method produced results which were better than he had seen from any other. He showed photographs of several cases which had been treated by radium seeds, including one of Mikulicz's disease.

Mr. Pinch concluded his address with a protest and a prophecy. He was sorry to notice that a section of the medical profession seemed disposed to depreciate the excellent work being done by British radiologists, though pointing with admiration to the work of any foreign practitioner. His prophecy, given after the fullest consideration, was that in the very near future radium would form as much a part of the up-to-date surgeon's armamentarium as the scalpel, and that it would be possible to treat with confidence and success many cases of malignant disease which at present were regarded as inoperable and hopeless.

Discussion.

Dr. EDGAR HAYDON emphasised the importance of taking into consideration the idiosyncrasies of the patient in radium therapy, because of the variable degree of reaction shown by different people. For the tongue he had at first used rather large doses, and nearly all the cases had gone wrong eventually, though the immediate result was good. Very much better results were secured by using needles 6 mm. long, with 4 to 5 mg. radium, these being left in position from five to seven days; if cross-firing was done, the result was miraculous. The same word was applicable to antrum cases, perforation being first done with trocar and cannula. Cases of antral disease had been cured for seven years without recurrence.

Dr. G. W. HILL spoke of his first application of radium to the gullet, which was also the first case in which radium was so applied in this country. Of

over a hundred cases in which he had used the radiation, one-third had lived a year or more, greatly benefited; one-third were relieved by the treatment, and the remainder either were not benefited or were made worse by it. He hoped it would be possible to evolve a technique for embedding radium in the gullet. To exemplify the extended field of radium applications he mentioned that he had used it for fibrotic ear cases, and for chronic middle-ear conditions.

Dr. J. H. WEBSTER considered, in opposition to Mr. Pinch's view, that distance irradiation was valuable for certain conditions; it would be a great gain if a larger quantity of radium could be secured to the Radium Institute. For primary breast cases and supraclavicular and nodular recurrences he got the best results from the use of 0·5 g. at a distance of 6 cm., giving a total exposure of 25 hours. Recurrences did not follow this treatment.

Dr. F. HERNAMAN-JOHNSON expressed his agreement with Mr. Pinch's prophecy. In the country as a whole there was not enough radium, nor, indeed, enough doctors familiar with its proper use. Judicious use of X rays and diathermy enabled conditions to be dealt with which could be treated more speedily by radium. In all methods of radiation treatment the general condition of the patient must never be lost sight of. Sometimes in treating recurrences by radiation the patient seemed to arrive at the end of his response and nothing remained but to send him away, as no more could be done for him. But within the last year he had been sending such cases to be treated by light, and a number of them had improved in a remarkable manner; pain disappeared, and they gained 8 or 9 lb. in weight in two months. Light treatment, properly applied, raised the resistance and made the patient more cheerful.

Dr. G. E. VILVANDRÉ was rather sceptical about the efficacy of X rays in the treatment of cancer. He knew of nothing which gave such good results in cases of epithelioma as radium. He objected to the use of ultra-violet light in carcinoma.

Sir CHARLES GORDON-WATSON said he would have liked to hear more about the surgery of access. He explained his procedure for rectal growths which were not regarded as operable by surgery. The important need was to know the optimal dose for a particular case. A standard case was that of a woman with a very advanced growth in 1925, who was cachectic and very ill. She had 50 mg. inserted for seven days, and the dosage worked out at 8000 milligramme-hours. The reaction was very severe, and for several days death seemed imminent. Then she improved rapidly, and was now apparently well. He always tried to get parallel rays playing through the growth. When a growth was fixed to the base of the bladder there were great difficulties. In women it was an advantage to be able to put the needles through the vagina into the anterior part of the growth. In three recent cases he had passed radium into the growth through an abdominal incision. If the whole growth did not seem to have been removed, he afterwards placed tubes of 50 mg. in the lumen of the rectum.

Dr. M. H. OLDERSHAW suggested that the difference in behaviour according to whether radium was used in large quantity for a short time, or a small quantity for longer exposures was explained by the fact that the cancer cell was especially susceptible to the action of radium during the process of division. Hence it was important to secure uniform irradiation through the tumour at the time when it was rapidly dividing.

Dr. T. P. LINEHAM spoke of the earlier practice at the Radium Institute, remarking that in skilled hands flat applicators were of great service; hospital equipments should include them. He favoured combining X rays and radium. He agreed that people who had ceased to respond to radium often showed great improvement when subjected to ultra-violet light.

The PRESIDENT raised the question of the possible danger of radium applications, referring to the deplorable results of the application of X rays to lupus vulgaris in early days and asking whether comparable dangers were to be anticipated from radium.

Mr. PINCH, in reply, said he had not attempted to insert radium seeds into the œsophagus from the outside, but had done so from inside for post-cricoid growth. He referred to a case of annular carcinoma in the lower part of the rectal ampulla. A 100 mg. tube of radium for 24 hours was ordered. By an error a second 24 hours' dose was given, and very intense proctitis ensued, but the growth absolutely and completely disappeared. He would not give this large dose deliberately.

HARVEIAN SOCIETY.

A MEETING of this Society was held on March 15th at the Paddington Town Hall, London, when Sir WILLIAM WILLCOX delivered the Harveian Lecture on

TOXICOLOGY AND ITS APPLICATION TO MEDICAL PRACTICE.

After outlining the position which toxicology had now attained in relation to medicine, the lecturer classified the diseases associated with the development of toxins in the body. These, he said, were in some cases produced by the entrance into the body of germs from without which by growth produce toxins, as occurred in the pathogenic diseases: here the invading causal organism was sometimes known. Also in recent years the importance had been recognised, in the causation of many pathological conditions, of the production of toxins at some localised focus, which were then distributed through the circulation into far distant parts of the body. In another class of cases we had, he said, impairment of the function of organs important to the body economy either for the excretion of toxic substances or for the regulation of metabolism—for example, the liver, the suprarenal glands, or the pancreas. Hence auto-intoxication, whose study, he said, was still in its infancy, but as our knowledge advanced we should learn much of the causation of disease and of preventive and curative measures.

Toxic Action of Drugs.

Indicating that the therapeutic action of a drug merged insensibly into a toxic action, the dividing line being influenced by idiosyncrasy or variations in tolerance (due to defective function), he described briefly the symptoms which might arise from the indiscreet use of bromides, iodides, the arsenic and belladonna preparations, the salicylates and salicylic acid, opium and quinine, while he reminded his hearers that in the treatment of many diseases at the present time the administration of large doses of drugs possessing powerful therapeutic action was advocated—in many instances the remedies being given intravenously. Summarising the studies of Ehrlich in his search for remedies which should have a selective toxic action on the invading microbe while remaining harmless for the host, he gave a description of toxic symptoms which might be associated with salvarsan and its congeners. He eulogised the mode in which Ehrlich introduced salvarsan to the medical profession as a model of perfection, seeing that it was delayed until after preliminary trials on the human subject and issued with the fullest warning of possible dangers and with the contra-indications to its employment. After an enumeration of powerful remedies which have been exhibited in many tropical diseases, Sir William Willcox discussed the lead treatment for cancer recently introduced by Prof. Blair Bell, which he described as an example of the careful use of a poisonous metal so as to obtain the full therapeutic effect without the production of serious toxic symptoms. He noted as interesting that the effects following the intravenous use of lead under proper control should differ from the toxic results which occur in chronic lead poisoning, where the drug

has been absorbed by the gastro-intestinal tract; in the latter condition the cardiovascular and nervous systems and the kidneys suffered damage from chronic disease, while these sequelæ were not noticeable after the therapeutic use of lead intravenously.

Liver Poisons.

A large portion of the address was taken up by the consideration of liver poisons—that is drugs in which a substantial proportion of the absorbed poison will be found in the liver. In many cases the lecturer considered that the liver might be said to have laid down its life in its endeavour to protect the body from the action of exogenous poisons, such as phosphorus in particular, salvarsan, tetrachlorethane, trinitrotoluene, and chloroform; while the same result might be said to occur in the action of bacterial toxins such as are found in typhoid and paratyphoid fevers, influenza, pneumonia, in streptococcal and protozoal infections, such as accompany syphilis, yellow fever, kala-azar, malaria, and amœbic dysentery. The result of the action of liver poisons gave rise, he said, to the definite symptoms which in an extreme form comprised the condition known as icterus gravis, and he laid stress upon the need for the practitioner to remember the danger accompanying the therapeutic use of drugs having a toxic action on the liver, for the action of these drugs might lead to a progressive atrophic cirrhosis. Before submitting a patient to the therapeutic action of a liver poison, it was advisable to protect the organ three or four hours beforehand by a small meal of glucose—40 to 50 g. with coffee and a little milk—because liver cells when stored with glycogen have an increased resistance to the action of toxic substances; and he made a plea for the employment of old and well-tried remedies whose therapeutic action was thoroughly understood, for definite danger had attended the employment of some of the newer remedies. Even the well-known animal extracts, insulin, pituitary extract, and adrenalin, had to be used with proper precautions, while the same applied to bacterial toxins in the form of vaccines or antigens.

Criminal Poisoning.

The lecturer warned the audience that the greatest caution, tact, and firmness must be displayed where any suspicion is aroused that a patient was the victim of an intended crime; and in illustration of his remarks he adduced the well-known Maybrick, Seddon, and Armstrong cases; while with regard to the laws relating to the sale of poisons he said that as at present framed they did not keep pace with advances in chemistry and pharmacology. Therapeutic remedies and chemical substances of powerful toxic action were being discovered daily, and were not comprised by the existing Schedules of Poisons. If control was to be kept over the sale of poisons, it seemed that some comprehensive scheme must be devised which will include newly discovered substances of toxic action—this subject was being considered by a Departmental Committee.

Treatment.

After comments upon drug addiction and industrial and commercial poisoning, the lecturer concluded with the following brief note upon treatment: "The cardinal principle in the treatment of poisoning should be the removal of the unabsorbed poison without the least delay. If this were always remembered, many lives would be saved. Where a poison has been taken by the mouth—unless it is a powerful corrosive—the stomach should be efficiently washed out as soon as possible so that any remaining poison may be completely removed from that organ; elimination should be promoted by free colon washing and by the administration of aperients. Where a poison has been injected subcutaneously free crucial incision and cupping will often enable some of the poison to be withdrawn and this will be facilitated by placing a ligature round the proximal portion of the limb if an injection has been made into that part of the body. Suitable antidotes should be given *after* removal of the poison has been effected as completely as possible. In the case of poisons producing prolonged coma, easily absorbable foods should be administered by the stomach-tube at suitable intervals so as to maintain the strength of the patient. *Chemical poisons*, if absorbed in dangerous amount, always produced serious damage to the bodily organs."

HUNTERIAN SOCIETY.

A MEETING of this Society was held at Simpson's Restaurant on March 19th, Mr. MORTIMER WOOLF, the President, in the chair. A discussion on

HICCUP

was opened by Dr. ROBERT HUTCHISON, who defined it as a sudden involuntary contraction of the diaphragm when the inrush of air that should follow was prevented by closure of the glottis. The abrupt arrest of inspiration produced the characteristic sound. The louder the noise the less the distress of the patient. The frequency of the spasm was usually about one-quarter or one-fifth that of ordinary respiration. The efferent nerve was the phrenic and the afferents were the vagus, sympathetic and sensory fibres of the phrenic. The centre had formerly been supposed to lie in the respiratory nucleus, but there was now reason to believe that it might be in the cervical cord in the region of origin of the phrenic. Langeron had found lesions at this site in a case of prolonged hiccup in tuberculous meningitis, while Urechia and Mitalescu had found hæmorrhages in the third, fourth, and fifth cervical segments in a case of cancer of the pylorus with prolonged hiccup. Since hiccup might persist through the apnœic periods of Cheyne-Stokes breathing, it was hard to believe that the ordinary respiratory centre was the centre of hiccup.

Hiccup might arise from stimulation of any of the afferent nerves mentioned—e.g., irritation or over-distension of the stomach, very hot or highly spiced food or alcoholic excess. Curiously, however, hiccup was a rare symptom of dyspepsia. The irritation might arise in the peritoneum or diaphragm, and any fever might be complicated by hiccup. Benjamin Ward Richardson—a teetotaller—had suggested that febrile hiccup had been due to the excessive quantities of alcohol formerly given in fevers. Hiccup might also arise centrally, as in encephalitis and uræmia, or be a symptom of hysteria. The most severe forms were the epidemic and the post-operative. The latter was most common after operations on the upper abdomen and the genito-urinary tract. The patients were frequently elderly men and the condition was essentially a "private practice disease." Dr. Hutchison could not recall a single case at the London Hospital in 25 years. Its occurrence was due to irritation of the afferent nerves, but there need not be peritonitis. Hiccup had been known to cease when a drain was removed from the ileum. Küttner had found that the anæsthetic and the position of the patient in bed had no influence on the spasm. It was not easy to give an explanation of the well-known frequency of hiccup after prostatectomy. Marion had described a number of cases in which it came and went with a rise and fall of urea in the blood. He admitted the difficulty of explaining why hiccup was not more often encountered in ordinary cases of uræmia.

Hiccup varied from a trivial, almost ludicrous, complaint to a most distressing complication threatening life by exhaustion. Knuthsen had described a patient who hiccuped for a month, about 480,000 times in all; he also mentioned a gentleman in St. Louis who had obtained a divorce after his wife had hiccuped for 20 years. As a rule the patient recovered. Knuthsen had listed more than 50 treatments for which success had been claimed; the only inference to be drawn was that none of them was much use. In the milder cases the spasms could be stopped by various dodges that arrested the action

of the diaphragm—e.g., holding the breath, sneezing, tickling the nose, or compressing the abdomen. When gastric irritation was the cause alkalis, carminatives, and gastric lavage might succeed. In toxic cases food should be stopped and elimination encouraged by the administration of large quantities of fluid. In severe cases it might be necessary to act on the nerve centres by sedatives like morphia, chloretone, veronal, bromides, the intramuscular injection of 30 minims of ether or even chloroform inhalation. Success had been claimed, less explicably, for benzyl benzoate, pilocarpine, and nitrites. In America the latest method was the administration of carbon dioxide, on the principle of stimulating the respiratory centre so vigorously that it would not respond to the pin-pricks of peripheral irritation. The reflex arc had been interrupted by compressing the phrenics or paralysing them or the lower cervical sympathetic by novocaine injection.

Epidemic Hiccup.

Sir FARQUHAR BUZZARD said that graphic records had shown that there were two spasms in a hiccup; inspiration and closure of the glottis was preceded by a very brief expiratory spasm. Hiccup had acquired increased importance from its somewhat frequent appearance in epidemic form during the last ten years, especially in America. 3000 cases had been seen in the Winnipeg outbreaks of 1919, 1921, and 1924. Adults had been more affected than children, and males more than females, in the proportion of 9 to 1. Little was known of its contagiousness save that, as in encephalitis, it was rare for two members of the same household to be affected. The incubation period appeared to be nine days and second attacks were very rare. The epidemics generally occurred in winter, lasted six to eight weeks, and were often coincident with epidemics of encephalitis. There might be a prodromal period of lassitude, vague pains, headache, epigastric discomfort and perhaps fever, or the onset of paroxysms might be sudden. The patient usually hiccuped between four and twenty times a minute, often for half an hour at a time with half-hour intervals. Remedies were powerless, but the spasms ceased of their own accord in three or four days. There might be no other symptoms, but often there was some vomiting and tenderness of the scalp, and occasionally headache, which persisted for some time. Death was rare. One fatal case had had six days of hiccup followed by fever and somnolence; at post-mortem his cervical cord in the phrenic region showed inflammatory changes like those of epidemic encephalitis. A typical case of epidenic hiccup might develop symptoms of encephalitis or generalised myoclonus. The condition might therefore be regarded as a small fragment of the symptomatic mosaic of epidemic encephalitis. The ætiology of epidemic hiccup was in its infancy, but it had been brought into line in a striking way with the other manifestations of encephalitis. Hiccup might be an initial symptom of encephalitis, but was rare as a sequel. It often appeared as an epidemic in communities over which a wave of encephalitis had recently passed, and might represent the effects of an agent of lower virulence. It was certainly an important question whether epidemic hiccup should not be notifiable.

There was some evidence to show that the medulla rather than the cervical cord was the centre for hiccup. It was an interesting question what was the original purpose for which hiccup was evolved. Was it in very early days a mechanism to prevent forced and deep inspirations while food was about?

Discussion.

A brisk discussion followed and a number of Fellows and visitors related personal and professional experiences of hiccup.—Dr. J. CAMPBELL MCCLURE said that he had always regarded the medulla as the shunt between peripheral and vagal messages. It was for the patients who made no noise that he was most afraid; he had seen patients quietly hiccup for months and then die. It was a most ominous and terrible symptom, which could not be cut short by one moment; the only treatment was to find the cause and remove it.—Dr. F. HOWARD HUMPHRIS spoke of the value of electrical treatment and diathermy.—Dr. C. F. HADFIELD and Dr. R. J. CLAUSEN spoke of hiccup coming on under anæsthesia. The former had tried carbonic acid gas without success.—Dr. A. C. JORDAN suggested that hiccup might be the beginning of vomiting. Cats hiccuped before vomiting and gastric lavage relieved hiccup.—Dr. A. S. CURRIE thought it was analogous to spasmodic sneezing. He had cured a bad case by large doses of hydrocyanic acid.—Dr. J. ALEXANDER described cases of high blood pressure, renal disease, and auricular fibrillation where hiccup had absorbed all the attention, but had disappeared when the underlying condition was treated.—Dr. D. NORRIS described hiccup in severe cases of typhus in Serbia.

The PRESIDENT thought that the cause in upper abdominal post-operative cases was some irritation at the base of the liver. All anæsthetists knew that pelvic operations required particularly deep anæsthesia, and a last resort to stimulate respiration was stretching the anal sphincter; he suggested that the pelvic diaphragm played some part in respiration. The physiology of respiration and the physiology of hiccup were very much bound up together. He had known vinegar in hourly 1 oz. doses act like magic on post-operative hiccup.

Dr. HUTCHISON, in reply, observed that the subject had been "much laboured but little advanced." He thought that the majority of patients with hiccup tended to recover and that the alleged cures were psychotherapeutic or pure coincidence. Those who died would have died in any case.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Sheffield on Feb. 24th. Dr. LEITH MURRAY, the President, who took the chair, described a case of

Sarcomatous Metaplasia of a Fibroid.

Malignant change in fibroids, he said, had interested him for many years. The literature in general gave its incidence as from 1 to 2 per cent., whilst Eden and Lockyer believed that it was slightly under 1 per cent. But though he had incised, and cut representative sections from, every fibroid that he had ever removed, he had never before come across definite malignant metaplasia occurring within a fibroid. This suggested that there must often be an element of doubt in the diagnosis. Probably the chance of error had been increased by including fibroid polypi, for on four occasions he had seen an œdematous fibroid polypus whose microscopical appearance was rather suggestive of malignancy. Cytological examination and absence of any recurrence had made it certain that the œdema was the cause of this appearance. In most of the recorded cases the symptoms included rapid growth and blood-stained discharge from the uterus. This discharge suggested that the tumour, if it had really begun in a fibroid, had partially escaped therefrom, and there was a loophole of error inasmuch as a uterine sarcoma, arising, say, in the endometrium and close to a fibroid, might penetrate the fibroid. The case to be described showed definite malignancy arising in the centre of a fibroid removed by myomectomy. The malignancy was not suspected until the specimen was incised after operation. A further point of interest lay in the youth of the patient.

A woman, aged 29, married seven years, had one child aged 6. She complained of aching pain in the right side off and on for twelve months; menstruation 5/28, regular and moderate until one month before she came under notice when, four days after an ordinary period, a further and similar period appeared. Examination showed a rounded and enlarged uterus, the fundus being palpable two inches above the symphysis pubis. A diagnosis of fibroid uterus was made, and on Nov. 20th, 1927, a solitary

fibroid weighing 12 oz. was enucleated from the right wall of the uterus at the fundus through an anterior incision. There was at first slight difficulty in defining the capsule anteriorly, but not more so than there was sometimes with myomectomy operations. The uterine cavity was accidentally opened during the enucleation and was sutured. The specimen had the external appearance of an ordinary fibromyoma, but preliminary incision showed in the centre a soft red and pulpy area, completely surrounded by fibromyomatous tissue. There was a complete layer of pale fibroid tissue beyond the central growth, which at no point had reached nearer the capsule than a quarter of an inch. Microscopical examination showed a core of hæmorrhage and necrosed tissue with malignant areas at the periphery. These areas were definitely cellular and appeared to have a vascular relationship.

The President thought the growth might well be called an endo- or peri-thelioma. It resembled very much a specimen described and figured by Leith.[1] The patient, so far, remained well. Ought he to remove the uterus?

Dr. A. A. GEMMELL (Liverpool) brought forward a case illustrating some of the difficulties of deciding what was the origin of the sarcomata seen in fibroids.

The patient was 54 years of age and had not come to the menopause. She had had four children. Menstruation had been excessive for the last 12 years and she had been losing continuously for four months when she came for consultation. The specimen consisted of the uterus and both appendages removed by total hysterectomy. It weighed 2½ lb. and measured on removal 5½ × 4 × 4 in. It was regular in outline with adhesions of omentum to its anterior surface. The uterus had been opened anteriorly and showed a tumour projecting from the posterior surface and filling the cavity. The lower pole of the tumour was necrotic and had burst. On section the tumour was mainly whitish and soft in appearance, with areas of yellow coloration and some hæmorrhages. Sections showed the growth to be almost entirely a sarcoma of mixed-cell type. Remnants of the fibroid were visible both at the periphery and amongst the sarcomatous cells. Sections from the uterine muscle at the base of the tumour failed to show any sarcoma, as did sections of the endometrium close up to the point where the tumour had ruptured.

Whitridge Williams's article of 1894, said Dr. Gemmell, still remained among the best of those on the histogenesis of sarcoma of the uterus. Judged by his standards the present growth was not likely to have arisen in the endometrium, as that membrane was normal right up to the place where the necrotic portion of the tumour had ruptured, and because the muscular uterine wall maintained its normal thickness. It might have arisen from the uterine wall, but the myoma-like tissue amidst the sarcoma cells and at the periphery of the tumour were against this view. That the tumour was apparently circumscribed did not exclude the uterine wall as a possible origin. On the other hand, this myoma-like tissue might be merely remnants of the connective tissue of the uterine wall. The history of excessive menstrual loss for 12 years was, however, suggestive of a pre-existing non-malignant condition.

Mr. W. GOUGH (Leeds) described a case of

Carcinoma of the Body of the Uterus after Interposition Operation for Genital Prolapse.

The patient, aged 70, complained chiefly of urinary symptoms—dysuria and pain, and also hæmorrhage in the urine for the previous month. There was also complaint of bearing-down pain, pain in the lower abdomen and back. Amputation of the cervix, colporrhaphy, and vesico-vaginal interposition had been done 15 years previously. Since that time she had been under the care of another surgeon, suffering from obscure urinary symptoms. On examination there was marked atrophy of the vagina, and no cervix could be felt. There was a hard mass lying posterior to the urethra and extending to the base of the bladder.

Mr. Gough said it was only the fact that he knew that the surgeon who had operated on her for the genital prolapse was in the habit of performing the interposition operation that made him suspect this mass to be the body of the uterus. Under an anæsthetic he found the anterior vaginal wall invaded by growth, which had ulcerated through about half an inch above the urethral meatus. The bladder was enlarged and extended well above the pubes. The urethra was unaffected. Microscopical examination showed the growth to be a papillary adeno-carcinoma, on the whole of the corporeal type.

Dr. F. H. LACEY (Manchester) described a case of

Combined Concealed Accidental and Unavoidable Hæmorrhage.

A 4-para, aged 33, was seen when 37 weeks pregnant, with a history of slight vaginal hæmorrhage. Although the hæmorrhage had been slight, yet her general condition resembled more that following a severe hæmorrhage. She was pale and faint, the pulse was 120 and weak; she was somewhat restless and complained of no definite pain, but of a continual ache in her abdomen and of dizziness which had been present for about seven hours; there was marked albuminuria. The abdomen was very large, tense, and tender, particularly to the right of the fundus; fœtal parts were felt indefinitely, but fœtal heart sounds could not be heard. The os admitted one finger and the placenta was felt to be covering it, but Dr. Lacey was confident that she had a concealed accidental hæmorrhage and decided to perform Cæsarean section. On opening the abdomen the uterus was found to be very distended, but there was no evidence of hæmorrhage into the wall; on opening the uterus a large quantity of amniotic fluid escaped and the cavity was seen to be occupied by twins, one placenta being in the lower uterine segment, and the other on the posterior wall of the uterus, under which, and close to the edge, was about a quart of clots. The uterus was removed. The twins weighed 6 lb. and 5½ lb.; the former, which was attached to the placenta prævia, lived 40 minutes, whereas the other child was stillborn. The mother made an uneventful recovery.

On account of the concealed hæmorrhage, said Dr. Lacey, the blood was examined and the W.R. was found to be strongly positive. This patient, therefore, had marked albuminuria, hydramnios, twins, concealed accidental hæmorrhage, placenta prævia, and syphilis.

Prof. MILES PHILLIPS (Sheffield) read a note on

Intermittent Periodic Pain as a Symptom of Carcinoma Corporis Uteri.

Attention was first drawn to this symptom, he said, in 1863 by Prof. James Simpson, the discoverer of chloroform, at a meeting of the Edinburgh Obstetrical Society. After demonstrating a specimen of carcinoma of the body of the uterus, he referred to the daily recurrence—usually at a regular hour—of intense paroxysms of pain, at first perhaps slight and intermittent, but soon reaching a high pitch of intensity, at which it continued for an hour or two, and then gradually subsided. Prof. Phillips had seen similar intermittent pains with calcified submucous fibroid and somewhat similar paroxysms of pain with retention of fluid in the cavity of the uterus from occlusion of the os. Except in these rare cases, however, this kind of pain was only to be met with, so far as he knew, in carcinoma of the body and fundus of the uterus. Eden and Lockyer (1928), in describing the symptoms of corporeal cancer, did not refer to pain of any description, which struck him as very remarkable, for in his series of 82 cases pain was definitely present in 60 (73 per cent.). A recent case in which the symptom was well marked had led Prof. Phillips to hunt through his own records of corporeal cancer. Five instances of Simpson's pain could be found in the series of 82 cases. A study of these led him to agree with Pozzi that the symptom was probably neuralgic.

The PRESIDENT was surprised to note Prof. Phillips's high percentage of pain. He himself had gone over his private cases, 34 in all, and found that in 24 there was no complaint of pain. Two of these showed dilatation of the cervix with palpable growth of the external os, but without invasion of the cervix by malignancy. It seemed unlikely, therefore, that pain was associated with attempts at extrusion. Five of his patients complained of gnawing or cramp-like pain without periodicity; four of these were operable. Five complained of pain apparently arising outside the uterus—e.g., intestinal colic from adherent intestine, suppurative appendage disease, or prolapse.

Prof. W. FLETCHER SHAW (Manchester) described a Full-term Ectopic Pregnancy, and Mr. ST. GEORGE WILSON reported a case of the same kind treated by Cæsarean section with delivery of a child, with numerous deformities, which lived 5½ months.

[1] Journal of Obstetrics and Gynæcology, 1911, xix., 454.

Reviews and Notices of Books.

MALIGNANT DISEASE.

The Surgical Treatment of Malignant Disease. By Sir HOLBURT J. WARING, M.S., M.B., B.Sc. Lond., F.R.C.S., Surgeon and Lecturer on Surgery, St. Bartholomew's Hospital; late Vice-Chancellor, University of London. London: Humphrey Milford, Oxford University Press. 1928. Pp. 667. 50*s*.

IN 1921 Sir Holburt Waring delivered the Bradshaw Lecture before the Royal College of Surgeons of England, taking for his subject the surgical treatment of malignant disease, and it is not surprising that, faced with the necessity of summarising within the limits of a single discourse so huge a subject, he should have felt prompted later to enlarge upon the theme, and finally to make it the subject of a text-book. In the original preparation of the lecture much material in connexion with the surgery of malignant disease was amassed from the records of St. Bartholomew's Hospital, while the lecturer stated definitely that he would confine himself to personal observations made during the past 25 years; but now consultation of general surgical literature has enabled him to range with full detail over the whole field, while in every chapter of this large volume personal experience plays a part, whether in advice as to diagnosis or in instruction as to treatment.

The result is a book of outstanding merit which must have entailed much sustained work. The arrangement of the matter is regional, which clearly has its di-advantages, for some repetition must be employed under different local considerations, when general precepts might have been laid down. But in consecutive chapters we have clear accounts of malignant disease as it occurs in various parts of the body, the order of these being to a great extent arbitrary. The first eight chapters, comprising nearly a quarter of the book, deal with the malignant affections of the gastro-intestinal tract from the tongue to the rectum, pride of place being due alike to the variety of growths to be anticipated and to the large field for operative procedure which has to receive discussion, although the affections of the liver, gall-bladder, spleen, and pancreas are separately treated. The next nine chapters deal with malignant disease as it manifests itself in the genito-urinary tract, including an elaborate study of malignant disease of the breast, but excluding consideration of the bladder, ovary, uterus, and vagina, to each of which special chapters are devoted. Malignant disease of the brain, intracranial tumours, and the affections of the spinal cord form a group of interesting essays, and other chapters deal with the conditions found in the face and skin, the thorax, the different limbs, and the special organs.

In each section the same orderly manner of dealing with the subject is observed. The symptoms and clinical appearances are described, so that the reader is reminded alike of the probable site of any particular manifestation and the probable interpretation of any history given by the patient; as well as warned in what direction to look for the evidence required before a diagnosis is made upon which treatment and a fair expectation of the results can be founded. When the surgeon has definitely decided, with such teaching in his mind, that an operation is necessary, the reasons for the advocacy of one or another procedure are given, as well as careful descriptions of the operative technique. The details of the various operations follow in the main the text of the author's well-known "Manual of Operative Surgery"; the instruction is sound and clear. Comprehension of the conditions which the surgeon may have before him, and of the methods which he may be advised to adopt, is assisted by profuse illustration of various malignant conditions, as exhibited in the museums, as superficially seen in the subject, as made apparent by preliminary exposure and when undergoing actual operation, while frequent diagrams are introduced justifying the advice given at various stages in the conduct of the case. Many semi-diagrammatic illustrations of the lymphatic system connected either with a particular organ or with an anatomical area are of real service in explaining the problems of glandular involvement. Notes follow on the results to be expected from surgical interference, and here a remark made by the author in his preface is significant. For while crediting the clinical records of St. Bartholomew's Hospital with being admirably kept, he points out that he has not been able to give complete statistical tables of the ultimate results of the surgical treatment of various patients, owing in great measure to the fact that during the twenty-year period, 1900 to 1919, which covers the records of the selected patients, no regular "follow-up service" was in existence. This condition of things, he says, is now remedied at St. Bartholomew's Hospital, but it is known to remain in many other large institutions, and these should hasten to imitate a valuable movement. To all the more important chapters a section is added dealing with treatment by radiological methods, and this is a place where the reader loses, by the regional arrangement adopted, the laying down with authority of some of the general principles which by this time have emerged. But Sir Holburt Waring, when he disclaims personal knowledge of the advances that have been observed under radium and irradiation treatment, is careful to provide the views of other authorities over many large fields of work.

We have here a valuable work of reference. The reader will find in its pages the material for diagnosis, treatment, and prognosis in all forms of malignant growths, the teaching being based upon wide reading and prolonged personal experience, and simplified by numerous illustrations, many of them in colour, and mostly very good. The number of cases cited is prodigious, and the author has been scrupulous to assign to others credit where credit is due. To each chapter there is a copious list of references, and a bibliography to the accuracy of which Sir Holburt Waring issues a challenge, when he states that his experience of bibliographies, as generally furnished in medical literature, has been unfortunate; the care that, no doubt, he has taken in the matter has not made the references in his book impeccable.

CHEMICAL ENCYCLOPÆDIA.

An Epitomised Digest of Chemistry and its Industrial Applications. Fourth edition. By C. T. KINGZETT, F.I.C., F.C.S. London: Baillière, Tindall and Cox. 1928. Pp. 807. 35*s*.

THE fourth edition of this useful digest has been greatly enlarged and revised. It has been the aim of Mr. Kingzett, who was one of the original founders of the Institute of Chemistry, to compile a work of reference which should be of use not only to professional chemists and chemical engineers, but to editors in search of concise information, to professional men who needed to look up something outside their own particular department of knowledge, and to the general community. The encyclopædia, as it is now called, is not intended to compete with such a comprehensive work as Thorpe's Dictionary of Applied Chemistry, but the author claims for it the position of being the only work of its kind in existence which gives so extensive a range of condensed information concerning chemistry and industry. In considering its merits, this intention should be borne in mind, for naturally the laboratory worker will not find within its compass all the information which he requires, although if journalists and publicists were to have a book like this on their shelves and make a friend and confidant of it, fewer mistakes would occur on the occasions when chemical and physical matters are referred to. The verbal accuracy of the dictionary is commendable, and in its development from a dictionary to an encyclopædia it has become increasingly interesting. The purchaser will get good value for his money.

PHYSICAL CHEMISTRY.

The Phase Rule and its Applications. Sixth edition. Revised and largely rewritten by ALEXANDER FINDLAY, M.A., D.Sc., F.I.C., Professor of Chemistry, University of Aberdeen. London: Longmans, Green and Co., Ltd. 1927. With 165 figures. Pp. 326. 10*s.* 6*d.*

A GOOD deal of rearrangement and rewriting has been necessary in order to do justice to recent advances without unduly increasing the size of this book. Of the 17 chapters included in the new edition two are devoted to systems of one component, seven to those of two components, and four and one to those of three and four components respectively, while a new chapter has been introduced on the practical application of equilibrium diagrams; this latter will be found of great value providing, as it does, a guide to the practical operations of the winning of salts by crystallisation from solution, and thus furnishing evidence of the utility of the phase rule first enunciated by Gibbs in 1877. During the 23 years of its existence this book has helped to elucidate to an ever-increasing number of students the intricacies of the phase rule, and has contributed much to the clearer understanding and more intensive study of this important branch of physical chemistry.

THE PHILOSOPHY OF MEDICAL PRACTICE.

Behind the Brass Plate. By ALFRED T. SCHOFIELD, M.D., M.R.C.S. London: Sampson Low, Marston and Co., Ltd. 1928. Pp. 326. 15*s.*

EVERY doctor who has enjoyed a long and active professional life must have amassed enough amusing and interesting experiences to make at least one volume of reminiscences. Dr. Schofield is no exception; indeed, the fact that he has been much absorbed in sociological matters has widened his circle of acquaintances. He has friends in all classes of society, and has had more varied experiences than most men. His book is not meant to be read from cover to cover, but can be opened anywhere. It is full of good stories and a genial philosophy.

PATHOLOGY.

A Text-book of Pathology. Fourteenth edition. By FRANCES DELAFIELD, M.D., and T. MITCHELL PRUDDEN, M.D. Revised by FRANCIS CARTER WOOD, M.D., Director of the Pathological Department, St. Luke's Hospital, New York, and of the Institute of Cancer Research, Columbia University. Edinburgh: E. and S. Livingstone. 1928. Pp. 1339. 55*s.*

THE fourteenth edition of this popular text-book has been carefully revised and new matter has been inserted, especially in those chapters dealing with the diseases of the nervous system, infectious diseases, and the diseases of bones and joints. Vitamins and hormones are noticed, and changes have been made in the chapters dealing with the thyroid, pancreas, lungs, and the blood. There are several new illustrations. To make room for these additions the chapter on lesions following various types of poisoning have been eliminated, for they are adequately dealt with in text-books of legal medicine, and a chapter on technique has been dropped from Part III. These changes have enhanced the value of the book without altering its character, and we have no doubt that its well-deserved popularity will be maintained.

Post-mortem Appearances. Second edition. By JOAN M. ROSS, M.D., B.S. Lond., M.R.C.S., L.R.C.P., Senior Assistant Pathologist to Royal Free Hospital; Lecturer in Pathology, London School of Medicine for Women; late Assistant Pathologist, St. Mary's Hospital. London: Humphrey Milford, Oxford University Press. 1928. Pp. 225. 7*s.* 6*d.*

IN preparing the second edition of this popular manual the author has wisely resisted any temptation there may have been to enlarge it. The text has been revised, and notes have been added on eclampsia, mediastinal tumours, subacute bacterial endocarditis, and thrombosis. Due attention has been paid to such criticisms as were called forth by the first edition, and we have no doubt that the book will maintain its popularity.

PSYCHE MINIATURES.

Medicine and the Man. By MILLAIS CULPIN, M.D. Lond., F.R.C.S. Eng. London: Kegan Paul, Trench, Trübner and Co., Ltd. 1927. Pp. 67. 2*s.* 6*d.*

The Constitutional Factor in Disease. By ARTHUR F. HURST, M.D. Oxf., F.R.C.P. Lond. Pp. 93. Same publisher and price.

THESE two additions to the medical series of Psyche Miniatures form, like the previous volumes, well-written approaches to the study of large and deeply interesting subjects. Dr. Millais Culpin discusses medicine and man, as the subject of medicine, from the neurologist's point of view, opposing the axiom that where an organic disease cannot be found a functional nervous disease must be thought of. He protests against the assumption that changes in mechanism always precede and cause mental processes—lightly to make this view a basis of clinical medicine involves, as he points out, facing the greatest problem that the philosopher can be asked to solve. He would restrict the word neurosis, which is now applied in a haphazard fashion to mental and physical conditions, to disturbances that can be described in terms of physiology—actions in which the neuron plays part, and the word psychosis he would have employed where the psyche is in question. Inquiring into the background of a neurosis, he points out that the doctor is presented with a heterogeneous group of disorders marked by an absence of post-mortem findings—for instance, dysmenorrhœa, asthma, many dyspepsias, miners' nystagmus, and D.A.H.—where a proper attempt to investigate the emotional side of the patient is very usually absent. The public he finds insufficiently concerned in the matter, preferring to ignore the existence of sufferings which do not prevent the victims from carrying on their work under unsuspected difficulties. Medical students remain uninterested in things which will play no later part in examinations, and quacks of all sorts thus obtain their opportunity. Dr. Culpin's remedy, put briefly, is that the various phobias, inhibitions, and obsessions now regarded as text-book curiosities, and too often unrecognised as they recur in medical practice, should be studied as phenomena of importance in establishing diagnoses, and suggesting both outlook and treatment.

Dr. Hurst's essay is founded on an address delivered before the Ulster Medical Society, to which additions have been made in the light of recent investigations, sometimes carried out at his clinic in the New Forest, and sometimes by other observers to whom due reference is made. He recalls to our mind the famous studies of T. Laycock and Jonathan Hutchinson now neglected, and urges that a study of the constitutional factor in the acquisition of disease would be a promising field for research. But the chapters which follow do not discuss either the fundamental meaning of constitution nor the difficult problems of heredity, for these could not be treated in any general way in so confined a space; he considers here only the constitutional factor in certain pathological conditions in which he has been specially interested for many years. No allusion is made to the inherited liability to such infections as tuberculosis, to certain anatomical abnormalities that are inherited, to the "inborn errors of metabolism" described by Garrod, or to the familial blood disorders, but Dr. Hurst discusses the gastric diatheses, achylia gastrica, Addison's anæmia, diabetes, nephritis, hyper- and hypo-piesia, and asthma in an informing manner, with practical suggestions for treatment.

THE LANCET.

LONDON: SATURDAY, MARCH 24, 1928.

PULMONARY FIBROSIS.

FEW diseases have suffered more vicissitudes of nomenclature than this pathological condition, and although it is convenient to refer to is as an entity, it is perhaps not altogether accurate to do so. BAYLE named it melanosis, SUTTON fibroid degeneration, CORRIGAN cirrhosis, ADDISON grey induration, WILSON FOX chronic pneumonia, and certain continental writers interstitial pneumonia. Few diseases, also, have produced such confusion of ideas as to their causation. RAMAZZINI,[1] whose alert mind marked many curious facts, described in his "Diseases of Tradesmen" a form of the disease in stone-cutters due to a "subtile Dust" and in "dissecting the Corps of such Artificers" he found the lung "stuffed with little stones"—obviously the pneumonoconiosis of our modern nomenclature. Later, BAYLE, LAËNNEC and others of the early nineteenth century French school of pathologist-clinicians described another variety, the fibroid disease of pulmonary phthisis, and though their descriptions are not always conclusive, it is evident they were dealing with cases of chronic pulmonary tuberculosis. Then, after more than half a century of confusion, came the classical monograph of CLARK, HADLEY, and CHAPLIN,[2] which separated off from the two conditions mentioned above the non-tuberculous pulmonary fibrosis of childhood resulting from the broncho-pneumonias of measles and pertussis. The account of the disease given by these writers still remains the standard work from which writers of text-books draw their descriptions. Unfortunately the coloured plates are not reproduced. This is a pity, for they are wonderfully good illustrations of the morbid anatomy of the various types of the disease. The picture of Addison's grey induration, especially, is a beautiful work of art showing the pigmented mottled lung and the thin white intersecting bands marking off the areas and planes.

Not a great deal has been added to our knowledge of pulmonary fibrosis in childhood since the publication of the last-named monograph. As in the case of other diseases in which the onset is insidious and the course extremely chronic, few observers are fortunate enough to watch more than one or two cases through to the end, and post-mortem inspections, as HODGKIN called them, are hard to come by. Moreover, by the time the autopsies occur the picture has generally been completely spoiled by terminal infections. And so precise knowledge on many points is still woefully lacking, and teaching on the disease almost non-existent. Nowadays, when the various State schemes of the tuberculosis and school medical services require, for statistical purposes, a label if not a diagnosis for these cases, it is small wonder that the fibroid disease of childhood often defies the ingenuity of the pigeon-hole manufacturer. If the cases are not notified as tuberculosis—and the bulk of them are certainly non-tuberculous—they run the risk of being overlooked under the various schemes of treatment provided, whilst to notify them is generally to falsify statistics. Amongst the recent attempts to throw new light on pulmonary fibrosis may be mentioned Dr. LEYS'S monograph.[3] The author has framed his title to cover as far as possible all the clinical forms of the disease. A large part of the book is an able restatement of CLARK, HADLEY, and CHAPLIN'S work, with recent descriptions and cases added to bring the subject up to date. Dr. LEYS does not contribute much that is new—perhaps it is hardly fair to expect it on such a subject—but when he opens his chapter on the origin of fibrosis with the words "fundamental phenomena in reaction to injury are those of healing; without them, there is no disease but death" we feel he has added to the confusion. Dr. LEYS considers that the lung in disease has become something of a Cinderella in medicine. The morbid anatomy of fibrosis certainly merits that description, but we are not so sure that the analogy applies to the rest of the picture. It is not so much neglect as the inherent difficulties of the subject which have made progress slow. The radiological contribution, for instance, is nowadays by no means despised and neglected, as Dr. LEYS himself demonstrates. On the bacteriological side he devotes a large amount of space to Pfeiffer's bacillus, which, he suggests, may be the causative organism in many cases. Sufficient data are given to make this view attractive, but the pursuit of this ubiquitous organism generally leads the worker, at his long last, into the mists of uncertainty. The difficulty is often not to find Pfeiffer's bacillus but to avoid finding it, and we see no reason why much that is claimed for this bacillus might not be credited to some of the other organisms which frequently infect the respiratory tract. Dr. LEYS has made out a good case for further investigation, however, and we hope he will be able to follow it up.

Another recent piece of research is that of Dr. W. BURTON WOOD published in our current number. Dr. WOOD has traced and examined a series of cases which had been diagnosed as fibroid lung during childhood. He has grouped them into four classes by the aid of the clinical notes and then regrouped them at the time of the follow-up examination 13 or more years later when the cases have reached adult age. By this means he has gone a considerable way towards answering some of the puzzling questions of this disease—e.g., what becomes of these children with fibroid lung? Do they grow up or drop out in the struggle? And how many become bronchiectatic? Broadly speaking, the answer given is that even with extensive fibrosis a bad prognosis is by no means inevitable and bronchiectasis by no means the rule. Dr. C. D. S. AGASSIZ and Dr. W. J. GILL[4] have written a careful account of the clinical condition from cases in children which have come under their care at High Wood Hospital. Several important doubts are settled by these writers. They found, for instance, that only 8 per cent. of their cases gave a positive Wassermann reaction, whilst antisyphilitic treatment of these cases failed to yield

[1] De morbis artificum diatriba, English Translation by James, 1746.
[2] Fibroid Diseases of the Lung, Sir Andrew Clark, W. J. Hadley, and Arnold Chaplin, 1894.
[3] Chronic Pulmonary Catarrh. By Duncan Leys, M.B., M.R.C.P. London: H. K. Lewis and Co. Ltd., 1927. Pp. 130. 7*s.* 6*d.*
[4] Archives of Disease in Childhood, February, 1928.

good results. The writers are at pains, also, to differentiate clearly between chronic pulmonary fibrosis and tuberculosis in childhood. We wish those who are prone to see pulmonary tuberculosis in every ailing child might read and mark their account But the most original contribution made is the work they have done on the cyanosis so commonly associated with fibroid lung. The blood-oxygen of these cases was found to be diminished owing, it is suggested, to the failure of aeration in the part of the lung affected —the "unaerated shunt" of LUNDSGAARD and VAN SLYKE. Pulmonary tuberculosis in childhood, on the other hand, does not show this diminution of blood-oxygen, presumably because the disease is less likely to be attended with extensive production of fibrous tissue. It would seem, therefore, that the component parts of the problem of pulmonary fibrosis are slowly yielding to careful research.

THE N.H.I. AMENDING BILL.

WE summarised last week the main provisions of the National Health Insurance Bill now before the House of Commons. The new Bill makes generous concessions to insured persons and will result in a considerable measure of simplification in the administration of the Act. Under the arrears scheme, which is suggested, the genuinely unemployed person will not be penalised as he is under the existing Acts. At present he ceases, after a period of 12 months' unemployment, to be insured at all; sickness and disablement benefits drop out, although he remains entitled to medical benefit. Under the new scheme the insured person when out of work will have a rubber stamp impressed at the appropriate place on his card by the local employment exchange, and such stamp will count as a contribution stamp. Domestic servants and agricultural labourers, who do not come under the Unemployment Insurance Act, will benefit under the arrears scheme. All insured persons will get cash benefits during the last nine months of insurance, that is, so long as they are entitled to medical benefit. The Bill makes no change in the rates of contribution payable by employers or employed, and the liability of the Exchequer towards the cost of the scheme remains at one-seventh of the cost of benefits and administration in the case of men, and one-fifth in the case of women. The approved societies in many areas are badly hit by the heavy sickness benefit claims, which in themselves mean loss of contributory income, and to excuse arrears would make many of these societies insolvent; their funds are to be recouped therefore by a Government grant. With unemployment at its present level, the cost to societies of forgoing collection of the penalties in respect of arrears due to genuine unemployment is estimated at £680,000 a year. It is proposed that, while the present rate of unemployment continues, an annual grant of £500,000 towards this cost shall be distributed to approved societies out of existing and prospective surpluses in the stamp sales account. The societies will welcome the simplification in administration which the Bill provides. At the present time an enormous number of arrears notices have to be sent out, something like 2,500,000 per annum; these will be reduced to 500,000. It is estimated that the scheme will relieve the societies of three-quarters of their arrears difficulties.

So much towards smooth working of administrative machinery. The Bill, if it goes through, will provide a new additional benefit, under the control of the approved societies, but dependent on their having an available surplus. Provided the money is available an approved society will be able to secure special treatment, for those of its members who require it, at any "charitable" institution where this treatment is given, by making contributions to the funds of such an institution. The first schedule contains a list of additional benefits from among which the approved societies may make a selection of the benefits to be provided for their members out of a disposable surplus—including the additional benefits specified in the existing Acts, others which have been added by Regulations and the new benefit granted in Clause 4 of the Bill. These were set out last week in tabular form and it will be seen that there is no material increase in their scope, they still form no part of the statutory medical benefit, and they are outside the purview of insurance committees. The distribution of additional benefits is thus left entirely to the discretion of the societies which are in the happy possession of disposable surpluses. Some even of the wealthiest societies have found the cost of dental benefit and optical benefit beyond their means and have been compelled to limit the scope of these schemes. The approved societies are very jealous of their freedom to select and to define precisely what additional benefits shall be given and the extent to which they shall be granted. This is part of the autonomy granted to them by the original Act. But so long as the open competition for insured members remains, and so long as the societies have undisputed control over their surpluses the anomaly of inequality of benefit must continue.

The amending Bill is, as we have said, of interest to the medical profession for its omissions rather than for what it contains. To complete the scheme of medical benefit and to make it available for every insured person would require drastic changes in policy and appropriate legislation. It is natural to inquire what is the significance of the striking omissions in the Bill. Insurance committees which were supposed to be doomed are after all to be retained; they now have charge of medical benefit, and when the additional benefits become statutory these will be administered presumably by the same committees. Most remarkable is the omission of any scheme for pooling surpluses of approved societies, even to a partial extent. Pooling of surpluses would lead to central administration of additional benefits under a scheme whereby they would be available for all insured persons; but this desirable object is out of reach until the Treasury is prepared to make substantial grants for the purpose. The only suggestion that the Government policy is looking in the direction of extending medical benefit to include additional benefits is contained in the memorandum explanatory of the Bill to the effect that, if and when any of these forms of treatment are made generally available to all insured persons as statutory benefits, their administration would be transferred to the insurance committees For the present we must perforce remain content with medical benefit in its general practitioner form. The much-needed help in diagnosing disease by means of laboratory facilities with the services of pathologists and specialists is not forthcoming, and there appears to be little prospect of these services materialising while we labour under the present financial stress. Unless, that is, a new sense of relative values should awaken among our rulers.

IMMUNISATION OF HOSPITAL STAFFS.

WE can to-day successfully protect human beings by immunisation against cholera, diphtheria, scarlet fever, small-pox, and the typhoid group of infections. We can also produce active immunity against measles by giving human convalescent serum five to eight days after contact with a patient in the infective stage—a modified attack results and active immunity is attained. Against how many of these diseases should a responsible authority advise the general public or nursing staffs to be immunised? It is possible to over-insure against risks which are small and a too-zealous advocacy of multitudinous immunisation against diseases of rare occurrence will surely alienate the moderate man. As regards the staffs of fever hospitals a decision is not difficult; the time has arrived when a conscientious medical superintendent must feel more than a little perturbed at any persistence of diphtheria and scarlet fever amongst his nursing and ward staff, and at the unwisdom of allowing any nurse positive to the Schick or Dick tests to remain on duty. But what of the staff of general hospitals? In America the matter is being taken very seriously, and Surgeon J. P. LEAKE [1] of the Federal Public Health Service, has recently suggested a programme for superintendents who wish their nurses to take no risks. It is a formidable one and involves 15 visits to the physician between "day zero" and the fifty-third day, two more visits seven months later, with 20 injections in all, the nurses finally being immune to small-pox and the typhoid fevers and having been converted from "Schick- and Dick-positive" to negative. We suspect that the comment of the matron of any of our large metropolitan hospitals would be brief and pointed. Nevertheless there is no escape from the logic of the position; each of the diseases in question does attack a number of nurses, and when diphtheria or scarlet fever is prevalent and nurses are liable to be told off to care for patients who come out with these diseases in the wards, it is a clear duty to immunise them, unless they are found to be naturally immune. It is another question whether the incidence of these two diseases amongst the general body of hospital nurses would justify insistence on immunisation in the case of nurses who may be reluctant to have it; most authorities would feel their duty had been discharged in making immunisation available to those nurses who desire it. Similar reflections apply to the general public; in institutions or communities where these two diseases are constantly present, responsible authorities do not hesitate to urge immunisation against them. Where certain diseases are absent in normal times—e.g., typhoid fever in England—the average person will consider immunisation unnecessary.

Much will necessarily depend on what may be called the technique of immunisation, and especially on reduction in the number of injections so far as this can be achieved without sacrificing efficiency. Investigations now in progress group themselves along four lines: simultaneous injections against several diseases, increasing the immunising power of each injection while avoiding the production of reactions, combining the test and the immunisation in one injection and, finally, obtaining higher efficiency by spacing the injections with progressive increase in dosage. Along all these lines much progress has been made, and we may look forward to a time in the near future when successful and simultaneous immunisation against these various diseases will be readily attained by a smaller number of injections and tests than that suggested in Dr. LEAKE's article. A. CASTELLANI [2] immunised simultaneously against three paratyphoid fevers and cholera, producing agglutinins to all of them. M. WEINBERG and A. T. GLENNY have produced antitoxin to two, three, or four gas gangrene organisms in the same horse. J. P. KINLOCH [3] and others have immunised children jointly against diphtheria and scarlet fever, and P. DESCOMBEY and G. RAMON [4] have immunised against typhoid and tetanus, giving at the same time salvarsan or other drugs called for. But it seems fairly clear that a great excess of one antigen will lessen or suppress the immunity response to a second antigen given simultaneously, and that the capacity of the animal body to react is a more or less limited quantity which can be wholly apportioned to one antigen or divided amongst several without sacrifice of efficiency if the quantities are properly balanced. The immunologist can readily increase the immunising power of diphtheria and scarlet fever prophylactic, but he must never lose sight of the possibility of reactions, non-specific as occur commonly enough in diphtheria prophylaxis, or specific as the "miniature non-infectious scarlet fever," which can be produced by too rash a dosage of scarlet fever toxin. Gradually the present prophylactic toxins and toxoids are being increased in efficiency. A. SORDELLI and R. SERPA [5] showed that toxin-antitoxin floccules are antigenic, and H. SCHMIDT [6] has begun to use this antigen on a large scale, recommending one injection only; GLENNY [7] has further shown that toxoid-antitoxin floccules are also highly antigenic and produce satisfactory immunity in animals with one injection. We understand that these floccules are being tried in England at present in a course of two doses, the aim being later to try one dose only. Attempts to combine the Schick test toxin and diphtheria immunising antigen in one dose were made some years ago in a somewhat indefinite way in the original Behring toxin-antitoxin mixtures; W. H. PARK uses his first toxin-antitoxin injection subcutaneously to indicate whether the patient is Schick-positive or not, and simultaneously to immunise. In young children this is so successful that he has employed the method in 100,000 young children; in older children, and in adults, the Schick response is liable to be blurred. This method is not possible with the toxoid-antitoxin mixture used in England, for this contains presumably no free toxin. A combined indicating and immunising mixture, D.P.I.M., to be given intradermally, has been described by GLENNY,[8] and is still under investigation. It is highly probable that the present routine weekly doses of diphtheria and scarlet fever prophylactics, though administratively convenient, are not spaced for optimal immunisation. GLENNY has shown that horses being immunised against tetanus give a much better yield if allowed to rest a month after the first injection before the course is continued, and RAMON [9] has advocated a rest of several weeks for human beings after the first diphtheria prophylactic dose.

In view of all this work we may look forward with some confidence to a day in the near future when a nurse reacting positively to the Schick and Dick tests, and wishing to be immunised against diphtheria and scarlet fever, will need no more than three injections, increasing in dosage at monthly intervals, and thereafter a Schick and Dick test. If antityphoid immunisation be also advisable, the typhoid antigen might be given simultaneously in the three monthly doses. We may also hope that some day the immunising injections will also be indicating mixtures and will render manifest the stage of immunity reached.

[1] Jour. Amer. Med. Assoc., Jan. 14th, 1928, p. 311.
[2] Ind. Med. Gaz., 1913, p. 457.
[3] Jour. Hyg., 1927, xxvi., 345.
[4] Ann. de l'Inst. Pasteur, 1927, xli., 803.
[5] Compt. rend. Soc. de Biol., 1925, xcii., 825.
[6] Arch. f. Hyg., 1926, xcvi., 251.
[7] Jour. Path. and Bacteriol., 1927, xxx., 587.
[8] Ibid., 1926, xxix., 118.
[9] Ann. de l'Inst. Pasteur, 1925, xxxix., 1.

LEICESTER ROYAL INFIRMARY.—The Leicester and County Saturday Hospital Society, having accumulated a reserve amounting to £30,000, has granted £10,000 of it to the Leicestershire Infirmary. Last year the society raised £44,000; in a quarter of a century it has collected £540,000. The rebuildings and enlargements of the infirmary, which are now in hand, will cost £90,000. It is officially stated that in one week recently it dealt with 1750 accident cases.

Annotations.

"Ne quid nimis."

PREVENTION OF BLINDNESS FROM OPHTHALMIA NEONATORUM.

In 1920 Dr. Addison as Minister of Health appointed a departmental committee to investigate the causes of blindness. Two years later in its final report [1] this committee made certain recommendations about the prevention of ophthalmia neonatorum, and the Council of British Ophthalmologists has now issued a statement [2] founded on replies to a questionary, addressed to all the important ophthalmic centres in Great Britain, in order to find how far these recommendations have been put into practice. The first of them was as follows: "That in every area, whether urban or rural, the Ministry of Health should take measures to secure the provision of suitable hospital accommodation for babies suffering from ophthalmia neonatorum and for their mothers." In this subject the answers were satisfactory except for 10 out of 51 districts in England and 1 out of 11 in Scotland. The second recommendation was that the Ministry should take steps to ensure that adequate nursing provision is always available for cases of ophthalmia neonatorum which are not admitted to hospital. The replies to the question on this matter were nearly all favourable, but the Council considers that they are too optimistic; whereas cases coming to the ophthalmia neonatorum centres from the immediate neighbourhood nearly always do well, those coming from outlying areas are—owing to difficulty and delay in transport—seen at a time when irreparable damage has often already been done. The third recommendation refers to facilities for consultation with an ophthalmic surgeon and for bacteriological investigation. In these respects the Council finds that the conditions are sufficiently satisfactory. The fourth recommendation advocates arrangement for pupil midwives to visit ophthalmic hospitals, or the ophthalmic departments of general hospitals in order to get direct experience of ophthalmia neonatorum. Here the condition of affairs appears still to be most unsatisfactory. There are facilities in only 24 out of 51 districts, and in 9 out of the 24 districts where instruction is given it is only by lectures and not practical. In London, at St. Margaret's Hospital, and to some extent at Moorfields, ample opportunities exist, but even there advantage is not being taken of the ample and full organisation for teaching.

In reply to further questions as to the number of cases of defective vision and blindness resulting from ophthalmia neonatorum, the Council is able to report excellent results in some of the large towns. In London, out of 2869 patients treated at St. Margaret's Hospital one was blinded in both eyes, four in one eye, 30 had both eyes impaired, and 56 one eye impaired. The report finishes with the following important recommendations:

That the Ministry of Health be advised:—

(1) That the whole country be mapped out into districts, each of which should have an ophthalmia neonatorum centre; and that all large towns that have an ophthalmia neonatorum centre should undertake the treatment of cases occurring not only in the towns but in the surrounding areas.

(2) That, where necessary, existing centres should be made responsible for larger areas than at present, and that arrangements be made for ambulance transport of both mother and baby if required.

(3) That it should be made a compulsory part of the training of district nurses to attend one of these centres for practical instruction in the application of treatment in such cases.

That the Central Midwives Board be advised:—

That, in accordance with the recommendation of the Departmental Committee, as centres for the treatment of ophthalmia neonatorum are established, it should be made a compulsory part of the training of midwives to attend one of these centres for practical instruction in the recognition of these cases.

That the General Medical Council be advised:—

That it should be made compulsory for all students to attend once at least at one of the ophthalmia neonatorum centres for practical instruction in the management and treatment of these cases, the most convenient time in the curriculum being during attendance at the course on fevers.

Something like 100 cases of ophthalmia are brought each week to the notice of the public health authority in England and Wales, but damage to the eyes from this kind of infection is as unnecessary as it is disastrous and we welcome these proposals that greater care should be taken to prevent it.

[1] H.M. Stationery Office. 1922. Pp. 136. 4s. (Now out of print.) See THE LANCET, 1922, ii., 1292.
[2] Brit. Jour. Ophthal., March, 1928, p. 149.

SICKNESS AND AGE.

Twelve months ago an officer of the American Public Health Service[1] published an investigation of data covering a ten-year period relating to absences from work on account of invalidity among employees of the Edison Electric Illuminating Company of Boston, U.S.A. It established a number of interesting points, such as the influence of paying wages during sickness upon increasing absenteeism for short periods; the fact that on an average each male lost 8·9 calendar days yearly through disability, and each female 14·0; that sickness caused 12 times as many absences as accidents among men, and 171 as many among women; and that respiratory diseases accounted approximately for one-half of all absences. A further study has now appeared,[2] dealing with the three years 1922–24, in which the general incidence of sickness is presented in the form of simple graphs. Accurate facts regarding the influence of occupation in causing sickness have proved difficult to elucidate, owing on the one hand to the way in which individuals of different physique and health naturally select different types of occupation, and on the other to the way in which a slight disability, such as minor respiratory illness for a telephone operator, may necessitate absenteeism from one occupation but not from another. The influence of age is shown to vary with the length of the sickness; thus absenteeism for sickness lasting less than four days varies for males from 872 absences per thousand on the pay roll under age 25, to 372 per thousand at ages 55 and over; for absences lasting from four to seven days age exerts little if any influence, the absences averaging close to 226 per thousand at each age, but absences lasting eight days and over vary from 130 per thousand at ages under 25 years, up to 211 from ages 55 and over. It is somewhat unexpected to find that youth experiences more minor sickness than does age, but this has also been disclosed by British investigations. Length of service was found to influence absenteeism so advantageously that those who had been five or more years with the company experienced less sickness than those of shorter service by 41 per cent. for one to three day cases, by 20 per cent. for four to seven day cases, but by only 2 per cent. for cases lasting eight days and over. Thus is seen how getting settled into an environment minimises the risk of succumbing to sickness. Here again, as in other inquiries, especially regarding the incidence of industrial accidents, is displayed the advantage of a permanent personnel and the disadvantages of a high labour turnover. A tendency for those who experience much sickness to experience an undue number of industrial accidents has also been brought out in other inquiries; a further point has now emerged—namely, that a definite correlation exists between industrial and non-industrial accidents; that is to say, the man who is more than usually likely to sustain an accident during work is also more

[1] D. K. Brundage: A Ten-year Record of Absences from Work on Account of Sickness and Accidents. Public Health Reports, U.S.A., vol. xlii., No. 8, February, 1927.
[2] Sickness Among Persons in Different Occupations of a Public Utility, ibid., vol. xliii., No. 6, February, 1928.

than usually likely to sustain an accident outside working hours. Clearly the cause which suggests itself as common to both periods is the personal factor, upon which attention is to-day being so much concentrated.

THE INNERVATION OF MALIGNANT NEW GROWTHS.

THERE is at present among pathologists a fairly general agreement that malignant new growths are not innervated. This view is based, partly at any rate, on the negative results obtained by a number of investigators when applying to neoplasms the methods usually employed for the demonstration of nerves in normal tissues. But it is also implied in our present conception of neoplasms as autonomous independent masses of cells which have passed out of the control of the organism in which they grow. A few years ago Itchikawa [1] and his collaborators claimed to have demonstrated nerves in tumours. But another Japanese investigator, Nakamoto,[2] was unable to confirm Itchikawa's findings for malignant tumours, while he could demonstrate nerves in benign tumours. Prof. Horst Oertel, of Montreal, has now published a preliminary report [3] in which he claims to have demonstrated nerves in malignant neoplasms. His observations were made on human material and include both sarcomas and carcinomas. The method employed was a modified Bielschowsky method, which depends upon impregnation with silver nitrate. The paper is illustrated by a number of micro-photographs which give a good idea of the structures which Prof. Oertel identifies as nerve-fibrils. In a tissue such as a tumour, which has lost its normal structure, it is clearly much more difficult to differentiate between nerve-fibrils and delicate young connective tissue elements, and further confirmation is required before Prof. Oertel's conclusions can be accepted. A confirmation of his findings would, indeed, as the author points out, involve a profound reorientation of our present conceptions of malignancy. We would have to admit (to use his words) that "the tumour problem extends beyond the tumour cell to the whole functional and structural complexity of the tumour organisation and growth. Indeed, the conception of independence and autonomy in tumour cells, if these observations are further substantiated, will have to be modified or interpreted accordingly." There is already a certain amount of clinical evidence, which has been emphasised particularly by Sir Lenthal Cheatle,[4] that certain squamous cell carcinomas and rodent ulcers of the skin have a definite relationship to the distribution of cutaneous nerves. The problem is intimately associated with the question of the existence of trophic nerves, and Prof. Oertel's observations may serve as a stimulus for the further investigation of this difficult subject.

ALCOHOLISM AND PELLAGRA.

A CONNEXION between alcoholism and pellagra has been noticed by various observers, but lately seems to have been lost sight of. Attention is again drawn to it by a paper by J. V. Klauder and N. W. Winkelman,[5] who give an account of 100 cases of pellagra, studied at the Philadelphia General Hospital, in which a diagnosis of pellagra was established. Though no percentages were worked out, the occurrence of alcoholism among the patients seems to have been high. The condition was usually severe, and it was often found that pellagra had developed after a continuous debauch of six or eight weeks during which the patient had consumed very little besides alcohol; spaghetti is given in one instance as the only other article of diet and baked beans in another. It is recalled that observers in Italy, Spain, Cuba, and the United States have noted the connexion between alcohol and pellagra, and the conclusion is reached that alcoholism predisposes to development of the disease, which Klauder and Winkelman are apparently inclined to regard as chiefly an intoxication. Criticism of this view was fairly expressed in the discussion [6] which followed the reading of their paper before the Section of Dermatology of the American Medical Association. Dr. J. F. Schamberg put forward the alternatives, that the action of alcohol depends on the digestive disturbance caused by prolonged drinking bouts, or that the alcohol is itself responsible for the pellagroid symptoms. He referred to the work of Dr. J. Goldberger, who has produced pellagra-like symptoms in dogs and rats by purely dietetic means, as being very convincing. Dr. E. S. Lain, of Oklahoma, said that pellagra in the Southern States is very common among children and young adults, in whom alcoholic habits had not yet developed, and also in certain poor communities where the Volstead Act is taken very seriously. He suggested that the part played by alcoholism may be chiefly economic. Dr. E. D. Crutchfield emphasised the impossibility of properly nourishing an alcoholic or a lunatic and thought that the evidence about the relation of pellagra to alcohol confirms the theory that it is a deficiency disease. Dr. J. B. Shelmire pointed out that pellagra was not diagnosed in the States until 1907, though the diet after the Civil War, for instance, must have been extremely poor. Dr. Klauder finally summed up. He said that, of course, he did not regard alcohol as the universal ætiological agent in pellagra; clearly, in the Southern States, it could not be so; but he believed that in the Northern States it is a strong predisposing cause. This seems a reasonable view. In some areas, no doubt—particularly, though not exclusively, in those where much maize is eaten—pellagra has a wholly dietetic origin; but in others, where the diet is not normally deficient, some other factor is necessary to render it so for certain individuals. Thus only can the occurrence of sporadic cases, even in England, be accounted for.

VORONOFF'S GRAFTING EXPERIMENTS: AN OFFICIAL INVESTIGATION.

The Board of Agriculture for Scotland has issued an official report on the work and claims of Dr. Serge Voronoff. It will be remembered that a delegation recently visited Voronoff's experimental farm in Algeria in order to investigate his grafting experiments on animals. The delegation consisted of Dr. F. H. A. Marshall and Dr. A. Walton of Cambridge, Dr. F. A. E. Crew and Mr. W. C. Miller, F.R.C.V.S., of Edinburgh. The objects of the visit were; (1) to witness the applications of testicular grafting to animals of agricultural importance; (2) to examine certain animals already subjected to this technique; (3) to examine and report upon the claims made by Voronoff concerning the economic value of this method in the field of practical live stock breeding. As an instance of rejuvenation the delegates were shown the bull "Jacky," an account of which is published in Voronoff's "Study of Old Age and my method of Rejuvenation." This bull had attained 17 years of age, and had been useless for stud purposes for two years when grafted. It was claimed that within four months of operation there had been a complete disappearance of the usual signs of old age and a return of potency. Three years after the operation, Jacky began to show once again enfeebled reproductive powers and a second operation was performed with a similar gratifying result. Voronoff regarded this as furnishing a complete and unqualified substantiation of his claims concerning rejuvenation. The British delegates are of the opinion that whilst the case of Jacky supports Voronoff's hypothesis it cannot be accepted as a final and conclusive proof. In the case of stud bulls 10 to 15 years is not a very exceptional age at which

[1] Bull. de l'assoc. franç. pour l'étude du cancer, 1924, xiii., 569, 626. [2] Gann, 1926, xx., 10.
[3] Canad. Med. Assoc. Jour., 1928, xviii., 135–139.
[4] Brit. Med. Jour., 1903, i., 904; ii., 1515; and 1908, i., 137.
[5] Jour. Amer. Med. Assoc., Feb. 4th, p. 361.
[6] Jour. Amer. Med. Assoc., Feb. 4th, p. 371.

an animal may retain its sexual vigour, and under rare conditions it may be retained still longer. It is also conceivable that Jacky at the time of grafting was suffering from transient ill-health, and the fact that his recovery occurred in spring or early summer may not be without significance. But even if the efficiency of grafting be admitted it must be remembered that in Great Britain the supply of high-class sires in their prime is adequate, and that for this reason grafting is not likely to be of economic value. In spite of his rejuvenation, the fertility of Jacky was low since only six calves arose as the result of 18 services. A low fertility ratio in a bull is a marked disadvantage.

The second series of experiments examined by the delegates were those on rams. It has been claimed by Voronoff that not only are the quantity and quality of mutton and wool improved by grafting rams before puberty, but also that this improvement is transmitted to the next generation. The delegates were of the opinion that these experiments had been carried out without the employment of sufficient statistical safeguards. The sheep used for the purpose came from a heterogeneous type of flock and it was felt that no precaution had been taken to avoid all possibility of "unconscious" selection of favourable types. Throughout the greater part of the year, the sheep were under the sole charge of native shepherds, who, though undoubtedly responsible and competent herdsman, could scarcely be expected to appreciate the finer points of a critical experiment. The possibility that nutritional inequalities may have affected results could therefore not be excluded. The method of control was also unsatisfactory. Small isolated experimented flocks were compared with a much larger population which received the off-types from the flocks selected. The average weights of the controls would, therefore, be influenced by the weights of rejected animals. The claim of Voronoff that the improved characteristics shown by the grafted rams are transmitted to the offspring involves the acceptance of a principle of heredity which has not yet been substantiated in the realm of science. Such a claim would require to be supported by the most critical and extensive research before being accepted.

To sum up, the delegation was not satisfied that Voronoff had proved his thesis, either in the case of the rejuvenated bull or of the grafted rams. Even should subsequent experiment carried out with better safeguards against error confirm Voronoff's results, they doubt whether these results would have any economic value to the British stock breeder. Their conclusions are in harmony with those already expressed in various reviews of Voronoff's work that have appeared in our own columns. Voronoff's claims have had wide publicity in popular and agricultural papers. It is highly desirable in the view of the official delegates, "that the matter be put to further and more critical test in this country, where conditions are more favourable to scientific control."

SICKLE CELL ANÆMIA.

Dr. E. V. Hahn,[1] who reports an illustrative case, remarks that since sickle cell anæmia was first described by J. B. Herrick in 1910, about 20 papers have been published describing the clinical features of the disease and the peculiar behaviour of the red corpuscles under various conditions. Sickle cell or drepanocytic anæmia is found only in negroes with the sickle cell trait—that is, whose red cells become distorted into sickle-shaped cells under certain conditions. This trait is compatible with perfect health and a long life; it is a hereditary characteristic, behaving as a dominant according to the Mendelian law of heredity. A correlation appears to exist between the severity of the anæmia and the number of sickle cells in the circulating blood. Symptomless individuals with the trait have few or no sickle cells in their blood. The clinical picture of the anæmia closely resembles that of familial hæmolytic jaundice with the following differences. In sickle cell anæmia the resistance of the red corpuscles is increased or normal, while in familial hæmolytic jaundice it is much decreased; in the anæmia the spleen is only occasionally enlarged, whereas in familial hæmolytic jaundice splenomegaly is constant; in the anæmia there are usually certain features not present in the other condition—e.g., ulcers of the leg, joint pains, and crises of abdominal pain. Dr. Hahn describes a method of producing sickle cells in vitro from apparently normal but susceptible red corpuscles freely suspended in saline solution and for fixation of them in their characteristic shape. The factors which precipitate the distortion of cells in the living subject and cause excessive distortion are unknown, but anoxæmia is a possible factor. Early splenectomy is said to be advisable in sickle cell anæmia; in the two cases observed by Dr. Hahn much clinical improvement followed this operation, although the sickle cell trait remained unchanged.

[1] Amer. Jour. Med. Sci., February, 1928.

THE COMPLETE HOSPITAL.

Captain Stone's book on "Hospital Accounts and Financial Control" is already familiar to most people concerned in hospital administration; as head of the accountant's department of St. Thomas's Hospital he has enjoyed abundant opportunities of learning the organisation and watching the modern developments of institutions for the relief of suffering. He is, therefore, much more than a mere financial expert, and the large and elaborate book now before us[1] is a remarkably complete account of methods of hospital management. It even includes details of the equipment of some of the great American hospitals, which suggest that if the United States has something to learn from us, we are not the sole depositories of practical wisdom in this matter. But the book is not a mere collection of facts. It discusses, fairly and reasonably, the outstanding questions of hospital policies, such as the future of the voluntary system, its relation to the poor-law, the need of coördination, and so forth. Never has the intricacy of the hospital machine been so clearly brought out as in Captain Stone's book, for, indeed, the literature of this side of the subject is sparse. Writing for doctors and secretaries, matrons and nurses, and boards of management, he is terse and practical. We learn how stores ought to be bought and arranged, records of cases made and filed, accounts kept, kitchens arranged, and meals served; we even have inventories of the contents of well-equipped wards and nurses' bedrooms. Captain Stone does well to insist upon the importance of good cooking both for patients and staff. "The operation may have been very successfully performed, and the medical and nursing care beyond criticism, but if the food and its service is unsatisfactory, the sum total in the eyes of the patient is a failure." It is notorious that in many hospitals both cooking and the service of meals are unsatisfactory, partly, no doubt, because of the inherent difficulty of providing meals in large number and often in great variety, but chiefly because the importance for the sick of well-cooked food attractively served is insufficiently recognised. But what hotels can do ought not to be impossible for hospitals, and the one metropolitan hospital which has a dietetic department finds that many cases which might otherwise have to be admitted can be treated quite safely at home by its help, while cases of diabetes which have been admitted can be discharged much sooner and their treatment continued at home. Thus economy and rapidity of cure may go hand in hand.

The best methods of hospital planning and construction are still an open question, and Captain

[1] Hospital Organisation and Management, including Planning and Construction. By Captain J. E. Stone, M.C., St. Thomas's Hospital. London: Faber and Gwyer, Ltd. Pp. 642. 21s.

Stone devotes two long and valuable chapters to a subject which lies at the root of the whole matter. Varieties of method are described whether applicable to general or specialised institutions; there are chapters on fire prevention, on hospital law as affecting the institution itself and its staff, on the advantages of coöperative purchasing, on the various methods of appealing for money, and the virtual exhaustion of "whirlwind campaigns" and "spectacular publicity methods." Stress is laid upon the practical importance of creating a central bureau for the collection and classification of information of all kinds relative to the inner working and activities of hospitals. Such a bureau has long been needed, and the lack of it is more keenly felt every year. At present King Edward's Fund, the Hospital and Medical Services Department of the Joint Council of the British Red Cross Society and the Order of St. John of Jerusalem, and the Hospital Officers Association all do something of what is needed in their respective spheres, but their activities necessarily overlap, and it is cheering to know that there is a good prospect of the Joint Council and the Hospital Officers joining forces. In many respects hospitals are too self-contained and are working too much in the dark in relation to each other. The creation of such a central bureau is an almost essential condition of that coördination which must come before long if the voluntary system is to attain the highest summit of usefulness. Captain Stone favours the establishment of a voluntary hospitals board, and sketches a suggested constitution representative not only of the hospitals themselves, but of the medical and nursing professions and the general public. There remains the large and highly important question of the fusion, in some form or other, of the voluntary and poor-law systems. From every point of view such a fusion is growing urgent. Many of the poor-law hospitals have now reached a high point of efficiency and the building-up process is constant, but the fact that they often have empty beds while the voluntary institutions are not only crowded but have long waiting lists is a weakness which is unbusiness-like, to say the least. The law as to the pauperisation of the inmates of the poor-law hospitals appears to be not quite clear, but, as Captain Stone suggests, the disability, if it really exists, could be removed by an Act of Parliament of a single clause. Such a step would clear the way, and it is difficult to believe that there could be any opposition to so simple a solution of a serious practical difficulty.

Among other matters, Captain Stone gives a useful analysis of certain contributory schemes which are so rapidly growing in number and strength, and an account of the progress of the movement for providing beds for paying patients. There is, indeed, no aspect of hospital administration and policy which is left untouched in this admirable and comprehensive volume with its many charts and graphs, and an index which is a model of its kind. The book has a preface by Lord Cave and an introduction by Sir Arthur Stanley.

THE FUNDAMENTALS OF HEALTH.

THE address of a popular nature, given annually before the British Medical Association in memory of Sir Charles Hastings, was delivered at the House of the Association on Wednesday evening by Sir George Newman, Chief Medical Officer to the Ministry of Health, Lord Cozens-Hardy presiding. It proved, as might have been anticipated, a succinct exposition of an enormous subject, in which great questions were dealt with simply and long stories arranged in useful perspective and with due proportion. Especial stress was laid by Sir George Newman on the great rise in the national health in the nineteenth century accompanying notable advances in scientific discovery. He described the relation of these scientific advances to the health and happiness of man as reading like a fairy romance, and proceeded to summarise the tale of nature and nurture in terms of science. "We must not expect," he said, "to apprehend either the science or the practice (of medicine) from hucksters' tips or from the 'bits and bobs' of propaganda in an advertisement of a patent medicine. We must learn to look upon the whole business as a science, concerned with no less a subject than the evolution of man, governed by the immutable laws of the universe, and demanding from us patient learning, vigilant understanding, and strict obedience. For the penalty of the court for disobedience of the laws of Nature is a degeneration of type or an earlier death sentence." Of the advance of medicine which had accompanied the great scientific advance he said that six things, the Darwinian hypothesis counting as one, had given the world a wholly new outlook upon disease and its control, and fresh powers for the relief of suffering, and the prolongation and betterment of life; the remaining factors he gave as the knowledge of physiology derived from the work of John Hunter, the discovery of anæsthetics, the recognition of the causes of infection following on the labours of Pasteur and Koch, the application of that recognition by Lister in the shape of antiseptic surgery, and the resulting development of preventive medicine. Wise remarks on food and feeding, on the value of fresh air and sunlight, of exercise and rest, and of personal cleanliness followed, and led up to a public appeal for the organisation of good health by the community. The purpose of preventive medicine being to improve environment, to develop capacity, and to reduce disease the main lines of policy to this end become Everyman's duty.

SEX EDUCATION.

THAT thorny and difficult subject of sex education has been engaging the attention of the British Social Hygiene Council. We hope they may make some progress in clarifying a situation which presents itself so differently to persons of equal knowledge, integrity, and common sense. We have, on the one hand, those who after much consideration and experience still sincerely adhere, or even desire to return, to the older view that knowledge of sex and sex relationships is best picked up anyhow—"in the gutter" as Dr. Clendening would say. And their opinion is, we understand, to some extent supported by experience of the attempt to teach young and youngish children the truth about sex; the process has not everywhere proved as beneficial or as helpful as its advocates hoped. The plain truth is, of course, that it is quite impossible to get any real understanding of sex into those who have never experienced its consequences. The facts and mechanism of generation can be made the subject of instruction, but to try to explain what passion is to those who have had no chance of knowing for themselves, or what falling in love means to those who have never had the luck to do it, is likely to be as unprofitable as expounding Rembrandt to the blind or Beethoven to the deaf. A knowledge of the anatomy and physiology of males and females is a trivial part of the sexual problem; whether it will help people to solve the really important matters of sexual relationships is on the whole doubtful, and anything it may do in this direction is negligibly small and possibly more than counterbalanced by the evil of rousing a curiosity which may well be left dormant as long as may be. Such, briefly, are some of the considerations put forward by those who would deal with sex education along the broader lines of teaching reticence, restraint, and self-respect. On the other hand is another body of equally sincere and knowledgable opinion, more vocal because it is less conservative, which believes and preaches that the solution of the troubles which wait on sexual maturity lies in frank discussion and knowledge as complete as it may be made. It is, indeed, difficult to say why such a proposal, axiomatic for most human activities, should cease to be properly applicable in this field alone, and it is easy to understand why, made in general terms, it obtains so much assent as it does. But it is evidently felt

that this way of looking at the sex question would be immensely strengthened if there were some objective experience in its favour. The way towards such a trial has been prepared already to a considerable extent. Young adults of both sexes are now often willing, and sometimes anxious, to discuss the sex relationships of men and women with a frankness and freedom which may well make any older people who happen to be present wish they were out of the room. It remains to be seen whether, armed with so much forethought and foreknowledge, they make a better job of it than their Victorian ancestors. They seem to have a better chance; it will be extraordinarily interesting to see the result. It is tempting to suggest that some sort of experiment might be made by making something of a specialty of sex education at some colleges and having none at all at others, and then seeing how the two groups of students turned out in later life. But it is very difficult to simplify the variables to an extent which would justify the experimental method and give an unequivocal answer. Pastors and masters are always apt to forget that their pupils learn at least as much from one another as from their formal instructors, and we are bound to doubt whether any such trial would be really worth making, except under conditions of complete institutional seclusion. Meanwhile we hope that most young children nowadays learn the facts about generation and pregnancy as they learn what happens to the food they eat and how their blood goes round their body. But what best to do with adolescents and young adults is a speculative problem; they will probably go very much their own way whatever wisdom experience holds out to them.

DIETS OF LOW RESIDUE.

MOST text-books on diet give little definite information about the amount of fæcal residue left by different foods, so that the construction of a low residue diet is often based more on opinion than on fact. Such a diet may often be used with advantage after operations on the rectum and anus in order to postpone defæcation and save the patient from pain and discomfort when the bowels are first opened. It is also recommended in the treatment of some forms of diarrhœa and constipation. At the Mayo Clinic an attempt [1] has recently been made to find out the amount of residue from various foods so that definite data may be available. Experiments were made on dogs in which the last 25 cm. of the ileum had been resected, together with the whole of the colon to within 6–10 cm. of the anus, the free ends of the ileum and colon being anastomised. These animals were fed once a day with single foods and fæcal specimens were collected at hourly intervals for eight hours; on the following day any further material found on the floor of the cage or in the rectum was collected and analysed. Gelatin, cane-sugar, dextrose, hard-boiled egg, meat, liver, rice, and cottage cheese were found to give the least moist residue, while the lowest dry residues were seen with dextrose, cane-sugar, gelatin, liver, meat, bread-and-milk, lard, and butter. The largest dry residue (86 per cent.) was given with raw egg albumin, whilst other high residues were obtained from potatoes, raw bananas and apples, and lactose. The experiments suggested that less material is carried into the colon if the diet is kept fairly dry, and that milk should not be given when no movement of the bowel is required. A large residue is left in the terminal ileum after taking this food, which may account for the fact that a milk diet is badly borne by many patients. The Mayo Clinic investigators wish to bring this finding to the attention of the medical profession "because there is a tendency on the part of many physicians to prescribe milk and sometimes nothing but milk whenever they wish to give the digestive tract a rest. They are prone to prescribe it also in cases of diarrhœa, although it appears that it is one of the first foods they should interdict. It has been our experience that milk has a bad effect on many persons with diarrhœa, who promptly get well when given nothing but meat or meat with a little starch or sugar." They also call special attention to the indigestibility of raw egg albumin, which is popularly regarded as the last word in easy assimilation. A certain amount of caution is needed, however, in applying these experimental results to human beings, and it should not be forgotten that in an ordinary diet a considerable residue of undigested food may be desirable. It is perhaps noteworthy that many of the figures recorded in these animal experiments agree with those obtained in men and animals whose colon was intact. This supports the current opinion that the colon absorbs little besides water.

[1] Intestinal Absorption: A Search for a Low Residue Diet. By K. Hosoi, M.D., W. C. Alvarez, M.D., and F. C. Mann, M.D., Arch. Int. Med., 1928, xli., 112.

Sir Hugh Rigby has been appointed Serjeant-Surgeon to H.M. the King, in succession to Sir Havelock Charles, who has been appointed Honorary Serjeant Surgeon.

THE Rev. John William Arthur, O.B.E., M.D. Glasg., has been appointed by the King an Unofficial Member of the Executive Council of the Colony of Kenya.

WE deeply regret to announce the death of Mr. Lionel Richard Fifield, surgical registrar and first assistant at the London Hospital. He died in St. Mary's Hospital, Paddington, early on Wednesday morning as the result of a motor accident.

A PAPER on the Treatment of Recent Fractures by Operation will be read by Dr. Charles Scudder, of Boston, before the Section of Orthopædics of the Royal Society of Medicine on Tuesday, April 3rd, at 8.30 P.M. The subsequent discussion will be opened by Sir Robert Jones, Prof. E. W. Hey Groves, and Mr. H. A. T. Fairbank.

Charing Cross, Westminster, and King's College Hospitals are said to have decided against the admission of any further women students. Should they take this step there will remain only two hospitals in London open to women—the Royal Free and University College. The entry of women to the latter school is limited to 12. It is estimated that there are at present in London 600 women students, about half of whom are studying at the Royal Free. Final decisions on the proposed change have not been reached, and at a meeting of the Senate of the University of London on Wednesday last Mr. Walter Spencer and Dr. Graham Little, M.P., put forward a resolution calling for an inquiry, the result of which was not known when we went to press.

As we have already announced, a conference on rheumatic diseases will be held at Bath on Thursday and Friday, May 10th and 11th, under the presidency of Sir George Newman. The subjects for the three sessions will be the social aspects, the causation, and the treatment of rheumatism, and the congress will deal both with the acute rheumatism of children and with the arthritis and fibrositis of adults. Those who wish to take part are asked to send their names to Dr. Vincent Coates, the hon. medical secretary, 10 Circus, Bath, before May 5th. Special concessions have been made by the railway companies and hotels, and it is stated that the Ministry of Health and the Scottish Board of Health will look favourably on applications for the payment of expenses to representatives of local authorities. The annual meeting of the Balneological Section of the Royal Society of Medicine will be held at Bath on Saturday, May 12th, and members of the conference on rheumatic diseases will be invited to witness demonstrations of treatment by physicians of the Royal Mineral Water Hospital on that day.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXVIII.

THE TREATMENT OF HEAD INJURIES.

II. Conservative and Operative Measures.*

In the stage of reaction from concussion the patient is apt to be extremely irritable, seeking to get out of bed. His bed can be put against the wall and the bed-clothes may be firmly pinned down, but other forms of mechanical restraint should be avoided, as they only tend to increase the irritability. Skilled nursing does much to control a patient in this stage, and it is important to remember that irritability is often in part produced by a full bladder or full rectum. The room should be darkened, for there is great photophobia.

Morphia should at all costs be avoided; it depresses the respiratory centre, sometimes excites the patient, and may mask a relapse into unconsciousness. For the severe headache that always accompanies recovery of consciousness potassium bromide and chloral hydrate may be given in large doses by the mouth (āā grs. xx. every four hours) or by the rectum (in twice this dose), whilst hypertonic salt solution is of great value.

Hypertonic Salt Solution.—The administration of hypertonic solutions of salt forms a definite recent advance in the treatment of head injuries. As was originally shown by Weed and McKibben, the salt promotes resorption of cerebro-spinal fluid and thus lowers the intracranial pressure. It is used in head injuries to combat the rise of intracranial pressure that invariably follows the injury, and it has proved of great value in relieving the headaches and irritability which are associated with that rise, and in lessening the stupor produced by cerebral œdema. For mild cases 6 oz. of a 25 per cent. solution of magnesium sulphate can be run slowly into the rectum twice a day, fluids by mouth being at the same time restricted. If the magnesium sulphate is not retained in the rectum it can be given by mouth or even by stomach-tube. It is surprising how little diarrhœa is produced by large doses of the drug. In severe cases 70 c.cm. of a 15 per cent. solution of sodium chloride, or a similar amount of 50 per cent. glucose, can be given slowly by the intravenous route. The glucose must be chemically pure. In using sodium chloride care must be taken that the solution is injected only into the vein, for if any escapes into the subcutaneous tissues it is apt to produce local necrosis.

Lumbar Puncture.—Another method of reducing intracranial pressure in head injuries is to withdraw cerebro-spinal fluid by lumbar puncture every two hours. The fluid should be withdrawn slowly and the amount to be removed should always be controlled by manometric readings. The method is open to the objection that it disturbs the patient considerably, and for this reason, whenever possible, the use of hypertonic salt solutions is to be preferred.

Treatment by Operation.

1. *Compound Fractures of the Vault.*—Open wounds call for immediate treatment in order to prevent infection, which may give rise to meningitis, extradural or cerebral abscess, or osteomyelitis of the skull. As soon as his condition permits the patient is removed to the operating theatre. The scalp is shaved for a wide area around the wound and is carefully cleaned with antiseptic. Local anæsthesia (a solution of 1 per cent. novocaine) should be used whenever possible.

If the edges of the wound are dirty they should be excised. All fragments of dirt and hair are removed and the underlying bone is carefully examined. A fissured fracture requires no surgical treatment, and when the wound has been thoroughly cleaned the scalp may be closed by primary suture. On the other hand, if there is the slightest overlapping of the edges of the fracture, a small trephine hole should be made so that the under surface of the fracture may be examined. The reason for this precaution is that at the moment of injury fragments of dirt may be pressed in between the broken edges of the skull and may become entrapped between skull and dura after rebound of the bone. Areas of bone which are obviously depressed should be elevated, but first it is necessary to get a good exposure so that the process of elevation may be carried out under direct vision. This precautionary measure is necessary because dislodgement of a sharp edge of bone may damage the blood-vessels of the cerebral cortex and dura, and thereby occasion severe hæmorrhage. All dirty fragments of bone should be removed. The osteomyelitis of the skull, which may develop if this procedure is neglected, is apt to be a most intractable condition.

The dura is then inspected. If intact, it is on no account opened; if it has been torn, the underlying brain is examined, fragments of clot and dirt are gently removed, and the dura is closed, a fine rubber drain being placed on its outer aspect. It is usually possible to remove the drain within four or five days. After operation for head injuries, the patients, being still in a condition of irritability, often seek to pull off their bandages. It is therefore advisable always to reinforce the soft dressings with a bandage of starch or plaster-of-Paris.

Antitetanic serum should be given at the time of the operation.

2. *Simple depressed fractures* should be elevated within a few days of the injury, because if left they are liable to produce intractable epilepsy. In children they can easily be detected by palpation of the head; in adults, however, they may be closely simulated by hæmatoma of the scalp. When the diagnosis is in doubt it is well to remember that simple depressed fracture is uncommon in adults, so that an apparent depression of the head over which the skin is intact is in all probability a depression in the centre of a hæmatoma. The diagnosis, never immediately urgent, can always be settled by good stereoscopic skiagrams.

To elevate a depressed fracture a scalp-flap, erring on the liberal side, is turned down over the depression. Elevation of the bone should be carried out gently, for it is often followed by sharp hæmorrhage from the underlying meningeal vessels. The bone should be replaced.

3. *Relief of Cerebral Compression.*—When, in cases which have shown the "lucid interval," the intracranial pressure is mounting in spite of hypertonic solutions, and operation has thus become necessary, the question arises as to the situation and manner of exploration. Osteoplastic operations are rarely required. Having regard to what can be achieved by operation, and recognising the need of reducing operative interference to the minimum, it may be said that all we are capable of doing can be done through a simple subtemporal decompression. The side to be explored is determined by the neurological signs. Inequality of the pupils is particularly valuable in this connexion, for experience has shown that, if one pupil is dilated and fixed while the other is contracted, exploration should always be made on the side of the dilated pupil, even in the presence of apparently contradictory paralytic signs. There should, however, be no hesitation in exploring both subtemporal regions in doubtful cases.

Through a linear incision in the direction of its fibres the temporal muscle is divided and retracted. When the underlying bone is removed blood-clot may be encountered, resulting from that comparatively rare condition, rupture of the middle meningeal artery. The clot is removed (suction is the best method) and the artery, if still bleeding, is stopped

* Part I., on General Management, appeared last week.

by means of a silver clip or by bone wax. Whether extradural clot has been found or not the dura should be opened. Clot may be encountered on the surface of the brain and should be gently removed. More often, on opening the dura, no clot is found, but there is an escape of blood-stained cerebro-spinal fluid in unusually large amounts. In this type of case there is presumably a severe cerebral œdema and possibly some disturbance of the mechanism of absorption of cerebro-spinal fluid. These cases usually do well after decompression.

4. *Cerebral Contusion.*—Whether he be unconscious or not, a patient who shows persistent localising signs, such as hemiparesis, astereognosis, or aphasia, should be treated by operation. These signs usually indicate a circumscribed area of cerebral contusion. By decompression at or near the site of contusion the process of recovery is hastened and probably rendered more complete. Usually a subtemporal decompression on the corresponding side suffices to relieve the symptoms of contusion, and it has the advantage over decompression at the site of contusion that the resultant defect in skull and dura is protected by muscle, and is therefore less liable to disturb the patient in after life.

Prolonged Rest.

In all head injuries that have been severe enough to produce distinct concussion it is of the utmost importance that the patients should take complete rest in bed for two or three weeks, or even longer, after the accident, according to the severity of the original injury. By so doing they provide the right conditions for repair of the injured brain and run the least risk of developing distressing and debilitating sequelæ.

HUGH CAIRNS, M.B., B.S. Adel., F.R.C.S. Eng.,
Assistant Surgeon to the London Hospital.

Special Articles.

MEDICAL RESEARCH COUNCIL.

ANNUAL REPORT FOR 1926–27.

(*Continued from p. 306.*)

IN a previous notice the sections of this report dealing with problems of the circulation and of nutrition were briefly summarised. We have published in our columns[1] accounts of the research into the alkaline treatment of gastric and duodenal ulcers, carried out by Prof. H. MacLean and Dr. I. Jones at St. Thomas's, and into the effects of the endocrine glands on menstruation.[2] Experiments at St. Bartholomew's on the blood in ammonium chloride acidosis have shown that a change in the hydrogen-ion concentration accompanies changes in the carbon dioxide content and capacity. Among the very large number of other subjects dealt with by various investigators only a small proportion can be mentioned.

Problems of Child Life.

Over 80 per cent. of all infants born in the burgh of St. Andrews are being kept under regular supervision, and the coöperation of the parents is described as "remarkable." It is thus possible to study the relation of environment to the physical and nervous disorders of small children. An investigation into the intelligence of children attending the Royal Hospital at Glasgow has revealed arrested development in most of the cases of encephalitis, with a steady fall in the mental ratio. It failed, however, to show any definite correlation between intellectual deterioration and motor disturbances or changes in character.

At the Children's Hospital, Birmingham, work is being done on the blood chemistry and bone changes in cœliac disease and renal infantilism. The primary cause of the bony deformities in the latter condition seems to be the inability of the kidney to excrete phosphate properly, and treatment by ultra-violet light aggravates the disorder. In cœliac disease, on the other hand, there is poor fat absorption and hence poor supply of vitamin D, with faulty absorption of calcium and phosphorus from the bowel. Ultra-violet light will cure the bony deformities, even on a fat-free diet. Dr. H. A. Harris, working at University College, London, has found that transverse striations occur in the long bones of non-rachitic children after acute illnesses, and mean no more than a cessation of growth from some cause or another. They should, therefore, not be used as a test for the antirachitic properties of foods. For the purposes of life insurance and medico-legal inquiries these lines may be of great value as a record of the past illnesses of an individual. Dr. E. W. Fish, at the same institution, has found a fundamental difference between the teeth of the dog and those of the monkey. The enamel in the dog is freely irrigated with lymph, while that of the monkey is wholly inorganic except for the lamellæ. It may be that this accounts for the immunity of the dog to caries.

Organs of Excretion and Secretion.

Numerous workers are investigating the toxæmias of pregnancy. Evidence has been obtained that alkalis can prevent the onset of anuria and protect the kidney under conditions when nephritis commonly occurs. It is now possible to select the cases of nephritis in which the alkali treatment is likely to be successful. In the course of work at Cambridge under Mr. J. B. S. Haldane, it has been shown that concentrations of magnesium which are optimal for kidney tissue are poisonous to brain tissue, and that the high concentrations found in the blood in kidney disease are secondary to the uræmia. The progress of more than 10,000 men who contracted trench nephritis during the war has been studied; one of the most striking results is the frequency with which the original condition has cleared up, leaving behind it some cardiovascular impairment with high blood pressure.

Prof. V. Korenchevsky has continued at the Lister Institute his attempt to isolate the active principles of the testes and prostate. Difficulty has been found in the unexpected presence of large quantities of insulin-like substances in the testis. The results obtained indicate that active substances are present in both lipoid and protein-like fractions of the sexual glands. It has been found that a parathyroid extract, very active in increasing the blood-calcium, produces a persistent decrease in nitrogen metabolism, thus suggesting that parathyroid hormones and insulin act similarly upon nitrogen metabolism, and antagonise the thyroid. Further attempts have been made at Sheffield to control the symptoms of hyperthyroidism by a low diet. Promising initial results unfortunately proved inconsistent. Dr. G. Scott Williamson and Dr. I. H. Pearse are continuing their researches, which tend to establish a true secretion of thyroid hormone by way of the lymphatic vessels as distinct from a storage mechanism in the alveolar chambers. The former secretion contains no iodine and is the intoxicating factor in Graves's disease, while the colloid material contains thyroxin. The Joint Committee of the Council and the Obstetrical Section of the Royal Society of Medicine have decided definitely that there is no value in pituitary extract as a means of inducing labour. It generally shortens the first stage and always shortens the second stage, but has no effect on the third stage of labour. The committee appointed to investigate synthalin[3] found that it could not be regarded as a substitute for insulin, but that it deserved further investigation. It seems to lower blood-sugar by a process differing fundamentally from that of insulin.

[1] THE LANCET, Jan. 7th, p. 14.
[2] H. Gardiner-Hill and J. Forest Smith: THE LANCET, 1927, i., 862.

[3] THE LANCET, 1927, ii., 517.

Diseases of Animals.

Dr. A. S. Griffith has found that the bovine bacillus is the chief cause of tuberculosis in domestic animals, but that avian bacilli can be transmitted to mammals. Dr. C. Todd has found the path of infection of fowl plague and a means of protecting the birds by immunisation. Studies have been made of the immunity reactions to the virus of erzootic encephalitis (Borna disease) of horses, cattle, and sheep, and the animals have been successfully immunised. Mr. G. W. Dunkin has investigated Johne's disease and prepared a double intradermic diagnostic test, of which satisfactory reports have been received from veterinary surgeons. A method of immunising ferrets against distemper has been found, and many attempts made to extend this to the protection of dogs. While the work is not yet ready for distribution, the laboratory results are very hopeful.

Tuberculosis and Cancer.

The value of blood sedimentation and nuclear index tests as indices of clinical progress in tuberculosis has been confirmed. Blood platelet counts have shown that in surgical tuberculosis, as in phthisis, a thrombocytosis goes pari passu with severity of disease. Plasma becomes a more favourable culture medium for the bacillus when the blood platelets have been removed by filtration. The double intradermal test is steadily replacing the subcutaneous for detection of the disease in cattle.

Dr. Gye has continued his research into the "specific factor," and has found that tissue ferments play a large and sometimes decisive part in nullifying experimental work. The rapid loss of infectivity of a filtrate with incubation is due in part at least to the destruction of proteins by a proteolytic ferment. The work of Rous has been repeated, extended, and confirmed. The results tend to show that filtrates of the mammalian tumours tested contain an antigen of extrinsic origin which gives rise in immunised animals to an antibody which, with the addition of complement, neutralises active filtrates of the Rous tumour. Mr. Dick in Edinburgh is investigating the cancer-producing action of coal tar on the alimentary canal, and has studied the actions of sodium tetraiodophenolphthalein, and its dangers in radiography. Dr. Leonard Hill has found no support for the common statement that diet influences the incidence of cancer. A diet of grain and green food gives no protection to mice. Cancer increased in successive generations, rising in female mice from 25 per cent. to 50 per cent.

Ultra-violet Light and X Rays.

Observations at Hampstead have shown a very close inverse relation between the ultra-violet radiation recorded by the acetone blue method and the smoke pollution. On hazy sunny days there may be great brightness when the ultra-violet readings are low. The shortest ultra-violet wave-length seems to be above 3000 A.U., and it must be the longer waves in sunlight that produce vitamin D from ergosterol and flush the skin, although shorter waves from artificial sources act in this way. The great superiority of the long-flamed arc over the Finsen short-flamed carbon arc in erythema-producing rays has been demonstrated. While hæmolysin and cytolysin are destroyed by the longer rays neurotoxin is destroyed only by short rays, and antivenin is very resistant. Dr. L. E. H. Whitby, at the Middlesex Hospital, has found that the gamma rays of radium are highly bactericidal in the presence of calcium phosphotungstate. At the Cambridge Research Hospital it has been found that 20–25-hour embryos can recover from the effects of X rays, while older ones with an active circulation cannot. Isolated tissue fragments, however, from six-day embryos grow actively in culture after radiation. The death of the tissues is due to the inhibition of gaseous exchange due to the action of the rays on the circulatory system.

Pharmacology.

A new base, "spermidine," related to but simpler than spermine, has been isolated and identified and adds yet another to the class of constant tissue constituents for which no physiological function can yet be even suggested. The peculiar peptide "carnosine" caused unexpected difficulties in a chemical investigation of muscle, and the successful solution is expected to throw light on the whole subject. A large quantity of carnosine has been prepared for examination of its properties and reactions.

Some 50 synthetic compounds of organic substances related to dyes have been prepared and tested for trypanocidal activity. The work has suggested a method by which a number of organic nuclei may be tested quickly for their potential value as starting-points in the synthesis of trypanocidal remedies. Observations have been made on the double nature of the mechanism which cures trypanosome infections. It appears that first some of the parasites are killed by the drug and that thereby an immunity response is produced which leads to the destruction of the rest. A curative dose of a trypanocidal agent may be rendered ineffective when a subtherapeutic dose of some other substance is administered shortly before.

Sir Almroth Wright's studies have shown that it is necessary, for bactericidal tests, to pack the corpuscles as far as possible free from serum. The application of a procedure devised for this is giving good results. It has been found that the acquired potency of the blood in its defence against streptococci can be considerably prolonged by using the least toxic arsenical compounds and by spacing the doses so as to maintain adequate concentration. The white corpucles of patients suffering from severe streptococcal infections have been found to be much more sensitive to the toxic action of arsenical compounds than those of healthy persons. Mercurochrome has not been found to confer bactericidal power in animals, either upon the blood or on the bile. Dr. Todd has found no evidence of a relation between the virulence of hæmolytic streptococci and their capacity to produce a filtrable toxin.

A new gold compound of cystein has been formed from a normal constituent of tissue proteins, and so offers possibilities of introducing gold in a more natural vehicle.

Routine work on biological standards and assay has continued, and during the year over 4000 cultures from the national collection of type cultures were distributed, and more than 200 new strains were added. The output of standard agglutinable cultures and sera was four times greater than that for 1920–21.

Optics and Vision.

The department of applied optics has constructed two new microscopes, giving better facilities for the rapid repetition of observations, and a new type of reflecting condenser system has been designed to reduce the length of exposure in ultra-violet dark ground photomicrography.

Dr. H. Banister at Cambridge has shown that visual acuity is of less importance in selecting a good rifle shot than might be expected. Right-eyedness, however, is of great importance, and other tests for particular kinds of manual muscular control and coördination will detect the man to choose. It has been shown that a flicker as slow as eight per second does not impair visual acuity or colour appreciation. A biochemical study at St. George's Hospital has suggested that the aqueous fluid in the eye is formed by dialysis from the blood.

Physiological Investigations.

The katathermometer has been made available for use as an instrument of precision for measuring ventilation in warm and humid mines or factories, thus meeting a long-standing need of ventilating engineers. Dr. J. A. Campbell has shown that acclimatisation to low oxygen pressure is due to the body tissues, particularly the heart muscle, becoming tolerant of a low pressure in their immediate environment. He found no evidence in favour of the common view that the local oxygen tension in the tissues is restored nearly to normal during acclimatisation, nor did he find any close relationship between power to

increase the red cells and hæmoglobin or between the carbon dioxide tensions in the tissues and powers of acclimatisation, so that breathing cannot play the main part in the process. The heart seems to be the chief organ concerned; with insufficient oxygen its muscle degenerates. The underlying principle advanced by Dr. Campbell is that the body is unable to prevent a large rise of internal oxygen tensions under exposure to high oxygen pressure in the air, just as it is unable to prevent a large fall of oxygen tension in the tissues under exposure to low oxygen pressure in the air.

Mr. P. Eggleton has continued his study of "phosphagen," a constituent of muscle, which has been isolated as a barium salt from rabbit muscle and shown to contain creatine and phosphoric acid in equimolecular amounts. It breaks down in a muscle in contraction producing inorganic phosphate and is resynthesised during recovery in the presence of oxygen. This work clears up uncertainties about the relative places, in the chemical machinery of muscle contraction and relaxation, of carbohydrate and phosphate, and adds a new link between the functions of muscle and the presence of creatine. Phosphagen is apparently related to the velocity of contraction.

Intestinal Flora.

Mr. C. Dobell and Dr. P. Laidlaw have obtained every stage in the development of the *Entamœba histolytica* in artificial culture. It has been shown that the amœbæ cannot survive at ordinary temperatures for more than three days, but the cysts can live and remain infective to man for 37 days Emetine has been shown to have a specific toxic action in cultures on both human and simian strains. The entamœba can be transmitted from man to the monkey. One strain has been propagated in the department for three years, and has lost its original infectivity for kittens though not for monkeys, and has also lost its power of engulfing red corpuscles. Miss Bishop has shown that neither increase nor decrease in oxygen pressure, within the limits tolerable by a monkey, has any lethal effect upon intestinal protozoa.

Dr. L. S. Davidson, of Edinburgh, has devised a method for quantitative estimation of the chief groups of intestinal bacteria by which the differences of intestinal flora in health and disease can be tabulated. He believes that in the most chronic infections the cause is no new organism, but an increase in numbers or a change in site of the organisms normally present. In pernicious anæmia all organisms are enormously increased in number and there is a huge count of *B. welchii*. The toxæmia of intestinal obstruction seems to be probably due to this organism.

MEDICINE AND THE LAW

Dr. Alcock's Unsuccessful Appeal.

"A JURY," said Lord Justice Scrutton last week, "is rarely a good tribunal to decide actions which depend on professional skill." This important dictum was delivered during the judgment dismissing Dr. Alcock's appeal from the verdict of heavy damages awarded against him at Gloucester Assizes last December. The facts of the case will be remembered. A little girl, 8 years of age, fell off a donkey and broke her left arm above the elbow. She was conveyed ten miles in a motor-car to Gloucester where the limb was set in the doctor's surgery and she then went into a nursing home in Gloucester. The case alleged against Dr. Alcock was that he bound up the arm in a bent position without having got the fractured bone into complete alignment, thus producing a condition in which the arm muscles deteriorated. As Dr. Alcock was able to show, he had adopted the most approved surgical practice. An X ray photograph was taken before he began treatment; while he was manipulating the arm the X ray apparatus was used to throw the reflection of the bone upon the screen so that he could see exactly what he was doing. When he had finished the manipulation and bound up the arm, the radiologist reported that the X ray photograph showed a perfect reduction of the fracture. In these circumstances Dr. Alcock watched the arm subsequently to see that the circulation was not impaired; as soon as he detected that this had occurred, he loosened the bandages and endeavoured, though without success, to ward off worse symptoms. For the plaintiff it was said that faulty setting and subsequent negligence established Volkman's contracture; as this resulted in permanent deformity the child, who was stated to be a particularly promising musician, would be unable to follow the profession of music. Impressed by this fact, presumably, the jury awarded the large sum of £2150 damages. Dr. Alcock went to the Court of Appeal and asked for a new trial, complaining that Mr. Justice Shearman's summing-up was not adequate and that he had overlooked the fact that the doctor had followed the most approved surgical practice; the judge, it was contended on Dr. Alcock's behalf, had never told the jury that Dr. Alcock was entitled to rely on what the radiologist told him.

Lord Justice Scrutton's observations deserve close attention. The Court of Appeal was obliged to dismiss the application for a new trial because the law of the land has placed juries in the position of deciding these issues of professional skill or negligence, and, unless it could be said that there was no evidence whatever to support the jury's verdict (which was not suggested), it was impossible for the Court of Appeal to interfere. "I do not profess for one moment," said the Lord Justice, "that this case is a satisfactory one." The action was one for professional negligence. "The consideration of the margin between what would be an error of judgment (which is not actionable) and a departure from the degree of professional skill which a professional man practising for reward holds himself out to exercise is very difficult to explain to the jury and very difficult for them to follow. . . . It might very often happen that the judge would not feel very happy about the verdict of the jury, and the Court of Appeal also might not be very happy about a verdict against a professional man, but, if we were to grant a new trial, the case would have to go back again to the same tribunal"—i.e., a jury. In this case, said Lord Justice Scrutton, there was evidence before the jury on which they, properly directed, were entitled to decide either way; it was impossible for the Court of Appeal to interfere with the verdict although the members of that Court might have come to a different conclusion.

If the natural sympathies of a jury towards a little girl of 8, whose potential prospects as a professional musician are unhappily marred by an accident to her arm, are to be translated into the award of heavy damages against a medical practitioner who has followed the most approved surgical practice, then we really seem to be approaching the position in which a surgeon must be taken to guarantee the success of every operation he undertakes. Lord Justice Scrutton's judgment makes it clear that the verdict against Dr. Alcock is far from commanding his whole-hearted assent. There is something wrong with the system when such a verdict can be enforced against a professional man. The medical profession has often had occasion to protest against questions of professional skill being left to the arbitrament of a jury entirely devoid of technical knowledge. Lord Justice Scrutton's opinion of the unsuitability of a jury as the tribunal in such matters will strongly reinforce the view of the profession that the present position is intolerable.

Patent Rights in Therapeutic Manufactures: The Need of Novelty.

The claim of Sharp and Dohme (an American company, incorporated in New Jersey) against Boots Pure Drug Company, raised highly technical issues but also illustrated valuable principles of patent law. The plaintiffs brought their action originally before Mr. Justice Astbury, claiming that they were entitled

to Letters Patent (No. 219,922) for a method of making new alkyl resorcinols of high therapeutic value, particularly valuable as a non-toxic germicide; they claimed that the defendant company had infringed their patent. The defendant company answered that the patent was invalid for want of novelty and subject matter; that the methods described in the plaintiff's specification had been published before the date of the patent; or that the prior publication had indicated methods to be adopted for obtaining homologous alkyl resorcinols higher than those hitherto obtained. It was a question to some extent of how wide the plaintiff's specification might be. Their process was based on information contained in two previously published papers—those of Johnson and Lane (in the American Chemical Society's Journal of 1921) and of Clemmensen in 1913. Evidence by Sir William Pope and Mr. Ballantyne indicated that the reductions disclosed by Clemmensen were of such general value that, if used, they would probably result in the product for which the plaintiffs claimed a patent. It seemed clear that, if the plaintiffs had a valid patent, the defendants could not deny infringement. They had made and sold n-hexyl resorcinol made by a method indicated in Johnson and Lane's paper. Mr. Justice Astbury held there was no subject matter in the patent; he also held that the patent was invalid because of anticipation. In his judgment it appeared that the foundation of the process was laid in 1913; the only thing left to be done was to verify the anticipation of the earlier chemists. Verification of an earlier statement is not a ground for a patent grant. The plaintiffs took the case to the Court of Appeal, but their appeal was unanimously dismissed by a Court consisting of the Master of the Rolls and Lord Justices Sargant and Lawrence.

The subject matter of the privilege granted by a patent must involve, as is observed in Halsbury's "Laws of England," discovery and a new art. "An invention," said Lord Justice Lindley in 1892, "is not the same thing as a discovery; when Volta discovered the effect of an electric current from his battery upon a frog's leg, he made a great discovery, but no patentable invention; again, a man who discovers that a known machine can produce effects which no one before him knew could be produced by it, may make a great and useful discovery, but, if he does no more, his discovery is not a patentable invention." The subject matter of a patent is something for the sole working or making of a manufacture, but the manufacture must be something new and, further, it must not have been used by others at the time when the patent is granted. The reason is clear. The inventor must be encouraged but the justification for his monopoly is the benefit of the public. If his invention is not new, the public gets no benefit. Famous men like Lord Kelvin have been heard to express the view that our system of protecting discoveries by monopoly has done as much harm as good. If medical research were to be commercialised, the public benefit would be diminished. Judicial insistence that the element of newness should be present if patent grants are to be valid is well founded not only in law but in public advantage. Lord Hanworth in the case under discussion confirmed Mr. Justice Astbury's view that no inventive step had been taken; there had been only verification of previous researches, coupled with the ordinary skill that a chemist could be expected to provide and supply. It is matter for general congratulation that the English bench can produce judges capable of mastering the extremely technical details of patent cases. Specialists like the late Lord Moulton may be rare, but such judgments as that of Mr. Justice Astbury or the more frequent judgments of Mr. Justice Tomlin in patent matters are supremely competent.

Dangerous Drugs Register.

One object of the Acts and regulations dealing with dangerous drugs is to make it possible to trace a purchase. For this purpose the medical practitioner is obliged to keep a register and to enter his purchases therein. At the West London Police-court on March 16th a doctor was charged with failing to enter in the register required to be kept for that purpose certain purchases of dangerous drugs—namely—morphine sulphate and diamorphine hydrochlorate. It was stated that a detective-inspector had occasion to interview the defendant doctor about prescriptions containing heroin and cocaine supplied to two women patients. Purchases had been made from wholesale chemists in October and January last, but the purchases had not been entered in a register as required, though the defendant was able to produce a book showing a list of prescriptions. On behalf of the medical practitioner it was mentioned that he had practised for 14 years in Jersey and was unaware of the details of the Dangerous Drugs Regulations operating in this country. It was not suggested that he had been guilty of any illicit traffic in drugs. The magistrate, Mr. Marshall, imposed fines amounting to £21 with £3 3*s.* costs.

THE HARVEY TERCENTENARY:

CELEBRATION BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

FROM the Royal College of Physicians of London there has been issued a provisional programme of the several functions and entertainments arranged by the College in the course of the celebration of the Harvey Tercentenary; this is issued in advance, so as to give delegates and others early information of a general character. A full and detailed programme will be published in May, and may be obtained then on application at the College. Delegates and guests should send information as early as possible of the number of ladies, if any, accompanying them, in order that the Ladies' Committee may make suitable arrangements for the entertainment of ladies at certain ceremonies where their presence may be impracticable owing to limitations of space. Visitors attending the celebration may give the Royal College of Physicians, Pall Mall East, London, S.W. 1, as their postal address, and letters will be handed to them when they call. They should, on arrival, leave their London addresses with the Secretary of the College.

Provisional Diary.

Monday, May 14th: 11 A.M., Reception of delegates by H.M. the King at Buckingham Palace. 3 P.M., Reception of delegates and distinguished guests by the President of the Royal College of Physicians at the College; presentation of addresses by delegates; admission of honorary Fellows; eulogy of Harvey by selected speakers. 6.30 P.M. for 7 P.M., dinner to delegates and guests given by the Worshipful Company of Grocers at Grocers' Hall, Prince's-street, E.C.

Tuesday, the 15th: 10.30 A.M.–12.30 P.M., demonstrations of recent additions to our knowledge of the circulation by the Royal College of Physicians at University College. A reproduction of Harvey's original experiments will be displayed cinematographically. 1.15 P.M., luncheon to delegates and guests at St. Bartholomew's Hospital (Harvey's hospital), given by the governors of the hospital. 4 P.M.,* tea to delegates, guests, and their ladies at the College, with exhibition of books, manuscripts, pictures, silver, and other objects of interest. 9 P.M.,* conversazione of delegates, guests, Fellows, and their ladies at the Hall of the Worshipful Company of Merchant Taylors, 30, Threadneedle-street, E.C., by permission of the court of the company. The Prince of Wales has graciously consented to be present.

Wednesday, the 16th: In the morning there will be a continuation of the demonstrations at University College, London. 6.30 P.M. for 7 P.M., dinner to delegates and guests given by the President and Fellows of the Royal College of Physicians in the Guildhall of the City of London.

Thursday, the 17th:* In the morning and afternoon there will be a visit of delegates, guests, and their ladies to Oxford, by invitation of the Warden and Fellows of Merton College, of which Harvey was Warden.

Friday, the 18th:* In the morning and afternoon there will be a visit of delegates, guests, and their ladies to Cambridge, by invitation of the Master and Fellows of Caius College, whence Harvey graduated.

* Ladies are invited to those functions marked with an asterisk.

Morning dress will be worn at daytime and evening dress, with orders and decorations, at evening events.

It is hoped, however, that delegates and guests at the afternoon reception at the Royal College of Physicians on Monday, the 14th, will wear academic dress. Throughout the whole week preceding the celebration, including Sunday, the 13th, the Secretary's office will be open daily from 2 P.M. to 5 P.M., so that delegates, guests, and their ladies may call for programmes, tickets for the various meetings and entertainments, and for any other information they may require. It is requested that such calls may be made as early as possible.

Entertainment of Ladies.

Monday, the 14th: Afternoon, visit to Messrs. Peek, Frean and Co.'s model biscuit factory; tea provided. Evening, 9 P.M., Lady Bradford, "At home," at 8, Manchester-square, W. 1.

Tuesday, the 15th: Morning, visit to Royal Mint. Afternoon, visit to Royal College of Physicians (see diary). Evening, conversazione at Merchant Taylors' Hall (see diary).

Wednesday, the 16th: Morning, visit to White Lodge in Richmond Park, to see the pictures, by invitation of Lord Lee of Fareham; drive to Hampton Court Palace.

Thursday, the 17th: Visit to the University of Oxford (see diary).

Friday, the 18th: Visit to the University of Cambridge (see diary).

Other entertainments are in process of arrangement.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Simon Commission.

THE arrival of the Simon Commission has focused attention on the lines along which the self-governing institutions will develop, and these have their bearing on the future of medicine in India. Under the present Reforms Act of 1919 medical education and public health are "transferred" subjects—that is, they are dealt with entirely by Ministers of Local Governments. It will be the duty of the Commission to ascertain how far the present system has been utilised to advantage or otherwise since its introduction. Sir Norman Walker's tour in India was undoubtedly a stimulus to medical education here. The formation of a Central Medical Council for India was foreshadowed in his report and a Bill for the formation of such a body was brought before the Central Legislature. As, however, it contained a proposal that hakims, vayds, and other representatives of indigenous systems should sit on the Council, the Bill proved unacceptable. It is a sorry fact that the Reforms Act of 1919 practically overlooked medical and public health matters, and it is difficult to see how under the present Act such a body could be formed for the whole of India. But it is a point which may not escape the notice of the Simon Commission.

The Far Eastern Bureau.

The Advisory Council of the Far Eastern Bureau of the League of Nations has met at Delhi under the Chairmanship of the Public Health Commissioner of the Government of India, Dr. Madsen, of Copenhagen, and Prof. Shiga, of Korea, being among the 14 delegates present. The work of the Bureau is facilitated by the broadcasting of the weekly epidemiological report to the participating Governments. The incidence of epidemic disease in 147 ports of the East is now communicated by wireless to practically every country of the world within a few hours, with the result that quarantine measures can be speeded up and great economy effected. The international programme of plague research agreed on in Calcutta was adopted, and steps were taken to bring the findings of the plague experts to the notice of Geneva.

Proposed Central Research Institute.

The Calcutta Congress has stimulated effort directed to the prevention of disease in India. A committee, headed by Sir Walter Fletcher, has visited Lahore, Kasauli, Bombay, Madras, Ranchi and many intervening stations to examine the scheme for the establishment of a Central Imperial Medical Research Institute for India—to supplement, not to replace, those at present existing in Calcutta, Bombay, Madras and Kasauli. The object of such an institute would be the coördination of research work with other countries.

Health Demonstration Trains.

A novel form of medical propaganda is the organisation by some of the railways of scientific demonstration trains. One of these recently toured the Punjab and another Eastern Bengal. The public health exhibits were extremely graphic with posters and advices regarding the preservation of life and health. Veterinary exhibits showed the results of cattle diseases, the advantages of prophylactic injections, and the lines on which cow-sheds should be built. The demonstration train in the Punjab attracted 3000 visitors in one village near Lahore and Amritsar and 12,000 at Kasur.

Medical Education.

Statements made in one of the official pamphlets issued to the Congress visitors regarding the backward condition of medical education in India have produced some searching of heart among the indigenous practitioners in Bombay. There is no doubt that the Indian student is frequently unable readily to follow conversational English with his English teachers, but the position would hardly be better if he had Indian professors teaching in the English language. It is no doubt at the doors of the schools and the arts faculties of the universities that the blame lies. Secondary education throughout India is at a low level. At the same time there is a strong feeling among the indigenous medical profession that although the General Medical Council should have statutory powers of control over medical education in India, there should be a representative of Indian Universities on that Council. The ideal solution might be for the Government of India to establish a Central Medical Council for India, coöperating with, and under, the auspices of the G.M.C. It should not be more difficult to maintain the standard of medicine than that of other professions throughout India.

City Water-supplies.

Calcutta, many years ago, adopted slow sand filters, and is at present engaged in enlarging its water supply from 49 to 75 gallons per head. Madras, Poona, and Bombay have, in the past, delivered unfiltered water from unreserved upland gathering grounds, and this water, on occasions, has been accused of carrying water-borne disease. Bombay takes its supply from large lakes and, up to last month, the water was brought most of the way in open aqueducts. These aqueducts have now been replaced by large steel mains, and the supply is chlorinated. This important improvement was formally opened last month by the Governor of Bombay.

Malaria and Irrigation.

Special interest attaches to the visit to Bengal of Sir William Willcocks, a recognised expert in irrigation. Many parts of the Bengal delta are extremely malarious and it has been pointed out by Prof. C. A. Bentley that this condition is associated with comparative dryness, little or no flooding, and deteriorated agriculture. In Egypt, where the land is well irrigated, and two or three crops brought in each year, there is little or no malaria. If more water could be brought into the dry tracts of Bengal, prosperity would be enhanced, crops increased, and malaria very likely diminished. These points have been appreciated before, but hitherto the control of so large a river as the Ganges has been regarded as impossible. Sir William is at present touring the Ganges delta, and while he has not yet pronounced any definite views, it is understood that he regards as possible the damming of the Ganges by a large

barrage, and the distribution of its head waters by old channels to dry areas.

Opium and Ayurveda.

The policy of the Government of India with regard to opium still remains undeclared, as the report of the Committee recently appointed has not yet been published. A certain amount of criticism comes from the Ayurvedic practitioners, who employ opium very largely in their pharmacopœia and who are maintaining strongly that the undue restriction of the sale of opium is not to the interests of the indigenous practitioner.

The late Colonel Cook Young.

The news of the death of Lieut.-Colonel A. W. Cook Young, in a nursing home at Aberdeen on Feb. 7th, came as a shock to his many friends in Northern India, where he was widely known and very popular. He entered the I.M.S. in 1901, and had only recently retired on completion of 27 years' service. The most of his service was spent in military employ, except for a few years before the war, when he was medical officer of health for New Delhi. He saw service in the Tibet expedition of 1903, when he gallantly went to the assistance of a brother officer, attacked by a mad Lama, and sustained a severe scalp wound which nearly cut short his career. He served during the Great War in Egypt and as sanitary officer in Mesopotamia, receiving a Brevet Lieut.-Colonelcy. Cook Young was an enthusiastic polo player in his earlier years, and since the war took up racing, winning many trophies, notably the Army Cup at Lucknow in 1919. He was a fine type of the now extinct regimental medical officer, popular alike with officers and men, and he never took kindly to the station hospital system introduced for Indian troops after the war. A brusque and somewhat abrupt manner covered a kindly and genial nature; his caustic wit was never unkind.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Vital Statistics of the Negro Community.

THE admission, in recent years, of several Southern States to the birth and death registration areas has now opened to the vital statistician a new and promising field. At the suggestion of several negro sanitarians, the Office of Statistical Investigations of the United State Public Health Service in the person of Dr. May Gover has made an interesting preliminary review of the vital statistics of the American negro population.[1] This population has been increasing since 1790, but not so fast as the white population or even the native white population. This, although the mulatto is added always to the negro population. The coloured birth-rate in 1920 was slightly greater than the white—107 to 104. The ratio of negro mortality to white is 1·87 in the cities, 1·49 in the rural areas. Life-tables published for white/negro in various States bring out interestingly the risks at various ages. They show amongst other things that in the Southern States after age 40 the country negro has a better expectation of life than the city white. This is not true in Northern States like Ohio and Michigan. Tuberculosis is the outstanding cause of death in the negro population, being as high as 202 per 100,000 in the Southern Registration States. Cancer, diphtheria, measles, and scarlet fever have all lower rates for coloured than for white. In studying the trends of mortality, the resemblances between the races were found to be more striking than the differences.

[1] Mortality Among Negroes in the United States. Pub. Health Bulletin, No. 174. Washington: Government Printing Office. 1928. 15 cents.

Suggested Revolution in Criminal Procedure.

The proposals put forward some time ago by American psychiatrists, and reported in a previous letter, have found a powerful friend in Governor Alfred E. Smith of New York. The popular Governor has suggested that a State commission, composed of experts in psychiatry and penology, should be charged with responsibility for dealing with offenders after conviction, which would automatically relieve judges of the responsibility of pronouncing sentence. Such a revolutionary change in criminal procedure would involve an amendment to the State constitution. The Governor has recommended to the State Crime Commission that the legislature be asked for funds to make an exhaustive investigation. The main points in the proposal are summarised in the *New York Times* as follows:—

That the jury should determine only the guilt or innocence of the person on trial.

That after a jury has returned a verdict of guilty the power of imposing sentence should be taken from the judge who presided at the trial and given to a special State board to be created by a constitutional amendment.

That the members of this board should include legal experts, psychiatrists, and penologists devoting their entire time to the work and paid as high salaries as any others in State employ—$25,000 a year.

That this board should determine whether a convicted felon should go to a State prison or to an insane asylum; and that it should determine the length of punishment and the extent he may be subject to parole.

The cost of operating the scheme might amount to $1,000,000 yearly, but if successful it should prove a good investment. At any rate it has been warmly welcomed by criminologists and social workers as well as by the National Committee for Mental Hygiene.

The Cost of Funerals.

Many factors, mostly associated with the enterprise of the "morticians," have contributed to make the American funeral an expensive affair. The practice of embalming is almost universal. The average cost of embalming is less than £5, but the result is that the body lies in state often for several days, and this leads to the demand for magnificent coffins which are called caskets. It may account also for the popularity of the watertight caskets which I have seen in profusion at a State Fair, the watertightness being demonstrated in a booth equipped with a large water tank! In wealthy families these luxuries are not a serious factor but in poorer families they lead not seldom to destitution. The problem became serious enough two years ago to lead the Metropolitan Life Insurance Company to appropriate $25,000 for an investigation. A strong committee, including several prominent medical men, was appointed, and they have now issued their report. They find that in estates of less than $1000 more than one half the estate goes on the average into funeral expenses. They blame first the desire of the family for an elaborate funeral based either on convention or in order to "impress the neighbours," and in the second place they blame the lack of organisation in the industry. The latter is already in process of self-improvement and the committee appeals to doctors and ministers to help "ease the burden of burial for those who can least afford to bear it."

Tularæmia in Mice.

Large numbers of sick and dead mice having been found in Contra Costa County, California, a pair of dead field mice were sent to the plague laboratory in San Francisco. Spleen tissue of the wild mice was inoculated into white mice, white rats, and guinea-pigs, all of which developed typical lesions of tularæmia. *Bacterium tularense* was isolated from the guinea-pigs, and its identity confirmed by agglutination with a known serum. This is the first record of the *Bacterium tularense* having been isolated from naturally infected wild mice.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Edinburgh Corporation Bill.

LAST week a deputation from Edinburgh met the Secretary of State for Scotland, when the Town Clerk of Edinburgh argued forcibly in favour of allowing the compulsory system to be instituted. Mr. Neville Chamberlain, the Minister of Health, who was present was not persuaded, and said that the Government Whips would be put on when the vote of the House was taken at a second reading of the Bill. At a meeting of the Edinburgh Corporation last Tuesday, however, it was decided to proceed with the Bill. The Corporation have behind them the majority of the local authorities in Scotland and of the medical profession in Edinburgh.

Preservatives in Cream.

The statement of one of your Scottish correspondents in THE LANCET of Feb. 4th to the effect that what had been the law in Scotland under the Food and Drugs Acts is to be enforced under the new Preservatives Regulations, both English and Scottish, has been called "bad law." The brief facts of the situation are: (1) in England regulations authorised the addition of boric acid to "double cream"; (2) there were never any such regulations in Scotland; (3) the Sale of Food and Drugs Acts require that an article sold must be of the nature, substance and quality of the article demanded; and (4) under these Acts no person is to mix any article of food with any ingredient or material so as to render the article injurious to health. In Scotland any producer who added a preservative to cream has all along been liable to prosecution under these Acts; but, as the *Dairyman* states (quite fairly):—

> "If proceedings were launched against the seller under the Sale of Food and Drugs Acts for selling an article dangerous or injurious to health, there was no certainty that he would be convicted. Whether the proportion of boric acid present did in fact render the cream dangerous or injurious to health was a question of fact for the Court, often decided in favour of the defendant."

The condensed statement made in these columns that the prohibition of all preservative in "cream" presumably removes the necessity of proving whether any given percentage of boric acid present does, or does not, render the article injurious to health, is in line with the statement of the *Dairyman*: "After the promulgation of the Amending Regulations in 1916, the Court—in England and Wales—had no option but to convict if 0·4 per cent. was overstepped or if any preservative whatever was present in cream with less than 35 per cent. of fat." Under the Preservative Regulations, England and Scotland have now the same standard, and one of the objects of the Food and Drugs Acts—namely, to keep articles of food as pure as possible—thus receives greater definition.

Anderson College.

Anderson College, founded in 1796 and affiliated to the University of Glasgow some 25 years ago, is remarkable for the wide distribution of its old students, while many pioneers of modern medicine have taken out classes at the institution. Dr. J. D. Comrie, lecturer on the history of medicine in the University of Edinburgh, delivered last week the closing lecture to the Winter Medical Session at the College, in which he made an eloquent acknowledgment of the debt owed by modern medicine to the earliest workers. He showed how many of the fundamental facts of our science had been discovered in the school of medicine at Alexandria 2000 years ago, and how light was thrown upon this work by the publication, 300 years ago, of Harvey's "De Motu Cordis." He referred in his address especially to the work of Thomas Sydenham in relation to the use of quinine in malaria, to the advances in surgery made in Scotland by Peter Lowe and Richard Wiseman before the Listerian era, and to Lister and Macewen as being responsible for all that to-day stands for scientific surgery. At the close of the address the medals were presented to the prize-winners of the College.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 10TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small pox 347 (last week 365); scarlet fever, 1692; diphtheria, 1311; enteric fever, 40; pneumonia, 1663; puerperal fever, 53; puerperal pyrexia, 142; cerebro-spinal fever, 12; acute poliomyelitis, 6; encephalitis lethargica 29; dysentery, 14; ophthalmia neonatorum, 100. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 24 counties:—London, 1; Bedford, 2; Chester, 2; Derby, 21; Dorset, 1; Durham, 68; Gloucester, 4; Hertford, 1; Lancaster, 38; Lincoln, parts of Kesteven, 1; parts of Lindsey, 3; Norfolk, 1; Northumberland, 11; Nottingham, 14; Southampton, 1; Stafford, 13; Suffolk East, 1; Surrey, 1; Warwick, 4; Yorks, North Riding, 13; West Riding, 89; Brecknock, 3; Glamorgan, 25; Monmouth, 29.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board, March 13–14th, was as follows:—Small-pox 11 (2 of them being under observation); scarlet fever, 1587; diphtheria, 2538; enteric fever, 33; measles, 1466; whooping-cough, 147; puerperal fever, 13 (plus 9 babies); encephalitis lethargica, 68; "other diseases" 33. At St. Margaret's Hospital there were 13 cases of marasmus and 13 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 deaths from small-pox, 6 (2) from enteric fever, 141 (77) from measles, 13 (6) from scarlet fever, 49 (15) from whooping-cough, 34 (4) from diphtheria, 35 (13) from diarrhœa and enteritis under two years, and 109 (23) from influenza. The figures in parentheses are those for London itself. The deaths from enteric fever outside London were reported from Southend-on-Sea, Worcester, Sheffield, and Newcastle-on-Tyne, one each. Of the 64 fatal cases of measles outside London, 7 each were reported from West Ham and Plymouth, 5 each from Tottenham, Manchester, and Sheffield, 4 each from Worcester and Warrington; while the figures in Glasgow and Dublin for the same week were 19 and 5 respectively. Two fatal cases provisionally classified to small-pox were assigned to the county boroughs of Rotherham and South Shields.

The death at Rotherham attributed to small-pox was, Dr. William Barr tells us, that of a woman (unvaccinated), 73 years of age, who became ill with the usual prodromal influenza on Feb. 5th. The rash appeared on the 11th, she was notified as mild small-pox on the 13th, and removed the same day to hospital. At this time the patient felt quite well and remained so until Feb. 29th, when she had a slight attack of bronchitis. On March 3rd she had almost completely recovered, and, as the rash had practically gone, it was contemplated to discharge her on the 8th or 9th. But she collapsed and died suddenly on the morning of March 4th. Dr. Barr was informed by her relatives and by her private medical attendant that she was subject to periodical heart attacks for several years. The death was certified as (1) bronchitis, (2) cardiac failure, (3) small-pox.

CREMATION SOCIETY OF ENGLAND.—The annual general meeting of members will be held at 28, Portland-place, London, W. 1, on Wednesday, March 28th, at 3.30 P.M., when the report of the Council for the year 1927 will be submitted.

TEDDINGTON MEMORIAL HOSPITAL.—Lord Dawson recently laid the foundation-stone of this institution, which is to replace the existing cottage hospital. The building provides two wards of 12 beds each and two single-bed private wards for paying patients.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdrs. J. Fullarton and G. E. Hamilton are placed on Retd. List with rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. G. F. Abercrombie to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capt. A. J. Beveridge to be Maj.
Lt. G. C. Phipps to be Capt. (Prov.).
E. A. Stroud to be Tempt. Lt.

TERRITORIAL ARMY.

Capt. A. C. Haddow to be Maj.
Capt. (Prov.) R. S. Creed is confirmed in his rank.
Lt. W. H. A. Dodd, from Gen. List, to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. F. G. Armstrong, having attained the age-limit, relinquishes his commn. and retains his rank.
Maj. E. Alderson, from the Active List, to be Maj.

ROYAL AIR FORCE.

Flight Lt. J. D'Isney Rear is granted a permanent commission in this rank.

Flying Officer G. S. Strachan is promoted to the rank of Flight Lt.

Flight Lt. D. B. Smith is transferred to the Reserve, Class D, H.

Flight Lt. E. Alston (temp. Capt., Dental Surgeon, General List) relinquishes his temporary commission on resignation of his Army commission.

The undermentioned are granted permanent commissions: A. F. Cook, E. J. Jenkins, and J. Magner as Flight Lts.

L. Freeman and G. S. Strachan as Flying Officers.

Flying Officers J. P. Hederman and E. J. Mockler to be Flight Lts.

INDIAN MEDICAL SERVICE.

Lt.-Col. L. J. M. Deas to be Col.
Capt. (Prov.) W. Lawie is confirmed in his rank.
Col. H. M. Cruddas retires.

COLONIAL MEDICAL SERVICES.

J. B. Kirk, M.O.H., Port Louis, Mauritius, to be Director of the Medical and Health Department, Mauritius. R. P. Cormack, Assistant Bacteriologist, Uganda, to be Senior Bacteriologist, Kenya. N. P. Jewell, Senior M.O., to be Resident Surgical Officer, Nairobi Hospital, Kenya. W. L. Webb, Senior M.O., in charge at Mulago Hospital, Uganda, to be Deputy Director of the Medical Service, Uganda. H. B. Owen, Medical Tutor at Makerere College, Uganda, to be Medical Superintendent and Principal of the Medical School, Mulago Hospital, Uganda. G. C. Edwards to be M.O., West African Medical Staff.

The annual dinner of the Royal Navy Medical Club will be held on Thursday, April 26th, at the Trocadero Restaurant Piccadilly-circus, London, W. 1. Further particulars can be obtained from the hon. secretary, Surgeon-Commander A. T. Rivers, R.N., Queen Anne's Chambers, London, S.W. 1

EXTENSION OF THE ELIZABETH GARRETT ANDERSON HOSPITAL.—At the annual meeting of this institution it was stated that the new wing is nearing completion and will probably be in use before the end of the year. It is proposed, with the approval of the King's Fund, to provide one or two floors of small paying wards in the building.

VALUATION OF HOSPITALS.—At a conference of Glamorganshire rating authorities it was decided to accept the county valuer's figure for hospitals of £3 per bed; isolation hospitals are to be taken at £2 5s. per bed. Hitherto hospitals have either not been rated at all, or have been assessed on a "sympathetic" basis. It is open to any institution to appeal, and it is now within the power of the local authorities to make a grant in aid.

Correspondence.

"Audi alteram partem."

ABSCESS OF THE BRAIN.

To the Editor of THE LANCET.

SIR,—May I beg the courtesy of your columns to join issue with your leading article of March 10th on this subject, some of the statements in which I feel should not be allowed to pass unchallenged? Your surmise is correct that no one has been able to improve upon Macewen's successes. No one has even been able to approach them. Macewen's *recovery*-rate of 72 per cent. for all cases (18 out of 25) is much the same as the *mortality*-rate for operation cases only in most of the series published of recent years from the large continental clinics,[1] a fact which makes it difficult to find justification for the optimistic tone of the article.

If this depressing mortality-rate is to be lowered earlier diagnosis and treatment of the condition are essential. Success in diagnosis, no less than in treatment, depends on an understanding of the pathology—an understanding not, as your article would have it, of intracranial pathology in general, but of the intracranial pathology of this particular condition, quite a different matter. The intracranial pathology of an abscess differs very definitely from that of a tumour. A tumour is new tissue which displaces the normal cerebral tissue around it, pushing it aside to make room for itself, and this increase in intracranial contents results in a corresponding increase in intracranial pressure. An abscess, on the other hand, increases in size at the expense of the brain substance, which is gradually destroyed by the infecting organism, so that the space previously occupied by cerebral tissue is now occupied by pus, and any increase in the intracranial contents is due mainly to surrounding inflammatory swelling. The degree of this surrounding encephalitis depends upon the virulence of the infection and is only considerable in acute cases, which are the exception rather than the rule. It follows that the increase in intracranial pressure in abscess cases is gradual and slow, and that it is incorrect to state that "a rapid" (and further on "a sudden") "rise of intracranial pressure" is "so characteristic of abscess formation." Nor is it correct to insist upon the "rapid onset of papilloedema," a sign which is generally recognised as being very inconstantly present in abscess cases, or upon "severe headache, drowsiness, and other signs of acute hydrocephalus." Dr. Symonds, in the address referred to in the article, lays stress on this latter point when he says: ". . . . that headache, drowsiness, vomiting and slow pulse are the cardinal signs of brain abscess . . . . is no more true than it is of cerebral tumour."

In the realm of diagnosis the article suggests a doubt of the wisdom of exploration before the appearance of the localising signs. It seeketh after a sign, but often there shall none be given. Of 20 cases which I have had the opportunity of investigating, and upon which my Hunterian lecture was based, 3 out of 12 cases of cerebral abscess, and no less than 4 out of 8 cases of cerebellar abscess showed none of the classical localising signs; they were silent abscesses. Of the former, all three were found by exploration and two recovered; while of the latter, only one was suspected and explored. Again, the localising signs, when they do appear, are late, manifesting themselves only after the latent stage, which lasts on an average four to six weeks, is past—that is to say, when an abscess has been in existence in the brain for that length of

[1] Some recent statistics of mortality-rates (per cent.) are: Beck, from Neumann's Clinic, 1907–1924, 82; Korner, collected statistics, 1925, 65; Nuhsmann, from Halle, 1920–1923, 55; and Lund, from Copenhagen, 1927, 82.

time. Lund[2] says that "Undoubtedly the symptoms mentioned (the various localising signs) are of considerable diagnostic interest, but, as a rule, *they appear relatively late, wherefore the diagnosis ought to be made at some earlier time if possible.*" To insist upon waiting for them is to be as one who would doubt the wisdom of an abdominal exploration for suspected gall-bladder disease until after the appearance of localising signs in the form of attacks of jaundice and gall-stone colic. My whole aim was to attempt to work out a symptomatology of the latent stage in order to provide a basis for the rational presumption of the presence of an abscess, as has been done by the abdominal surgeons in their own special sphere. This presumptive diagnosis would then be confirmed or disproved by exploration. I would say with Lund[2] that "in our struggle for a diagnosis the puncture needle should certainly be our last but also our most important weapon."

Finally as to treatment. We are to "map out" the situation of the abscess "by passage of a brain needle down to—but not through—the resistant wall of the abscess." It sounds delightfully easy, but how often can it be brought off successfully? My experience is that the sense of resistance, if any, is more often than not only sufficient to suggest that one's instrument *may* be impinging upon the abscess, so one pushes it a little further to make sure. Having found the abscess, we are to make "a wide opening in skull and dura," and deliberately to encourage the formation of a cerebral hernia, which is to be "desired." Desired?—when the literature is full of descriptions of operative methods designed to prevent the occurrence of this complication, which, when of any size, leads to a fatal result from purulent meningitis in most cases.

The conclusion of the whole matter is this: that so long as the policy of procrastination in regard to diagnosis and treatment is advocated by those in high places, so long will the mortality-rate of this, at the best, very dangerous condition maintain its present formidable level.

I am, Sir, yours faithfully,

Bath, March 12th, 1928 E. MILES ATKINSON.

THE ASTHMA RESEARCH COUNCIL.

To the Editor of THE LANCET.

SIR,—May I be permitted to add a further suggestion to those made by the Asthma Research Council in your current issue as to possible lines of research. In a recent correspondence in your columns I claimed that my insistence upon a definite use of words like "neurosis" was in order to encourage a more helpful attitude towards neurotic sufferers, and the present occasion adds force to my argument. In your annotation you remark upon the extraordinary varieties of conditions that may give rise to an attack, and add that there is a strong neurotic element in many cases. The medicine of the text-books offers nothing towards the study of this neurotic element, and the proposals of the Asthma Research Council do not refer to it. Yet among those who do not regard this element as something irreducible and inexplicable there is a considerable body of opinion, based upon clinical experience, that asthma is often the physical expression of an emotional state—the equivalent of an anxiety attack. The relation of emotion to the phenomena of sensitisation may perhaps be sought in the curious behaviour of the conditioned reflex, but neither physiologists nor psychopathologists can attack the problem without coöperation. I therefore suggest that the Asthma Research Council should add to their programme the investigation of the psychological aspect of the asthma attack.

I am, Sir, yours faithfully,

London, March 19th, 1928. MILLAIS CULPIN.

[2] Acta Oto-Laryngol., 1927, xi., 479.

STEREO-FLUOROSCOPY.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to the note by Dr. F. H. Humphris in your issue of March 3rd on the latest developments in stereo-fluoroscopic work. It is, I think, only fair to British radiology to point out that Sir James Mackenzie Davidson developed the very same idea, which Dr. Humphris describes, several years before the war. About the year 1908 he asked my late father and Mr. Rocky to design and construct such an apparatus to operate from an ordinary interrupterless transformer unit with a mechanical rectifier. Two gas X ray tubes were fed by this plant, one half cycle of current being passed through one and the other half cycle through the other tube. The tubes thus lit up alternately 50 times per second and were placed side by side at a suitable distance from the patient. The fluorescent screen was observed through a revolving disc which moved in synchronism with the alternating current, and contained two slits, so arranged that the eyes of the observer were alternately prevented from seeing the screen. Thus the left eye would only observe the screen when the right tube lit up and the right eye only when the left tube was operating.

The arrangement was a complete success and finally went to America. Obviously, the coming of the small-sized X ray tube and the improved fluorescent screen makes the problem easier, but the idea was conceived and satisfactorily solved in Great Britain approximately 20 years ago.—I am, Sir, yours faithfully,

W. E. SCHALL, B.Sc.

75, New Cavendish-street, W., March 15th, 1928.

To the Editor of THE LANCET.

SIR,—We have read with much interest the account by Dr. Humphris of the so-called "new method" of radioscopic examination by means of stereoscopic attachment. In fairness to British manufacturers, we think it right to point out to you that there is nothing novel about this so-called invention. To the best of our belief, apparatus of this kind was made, in accordance with the suggestions of the late Sir James Mackenzie Davidson, very nearly 25 years ago, and some years afterwards, probably about 1909, the idea was developed and tried out, practically, by the late Sir Archibald Reid. In both of these cases the apparatus in question was constructed by British firms, and much of the design and construction of Sir Archibald's Reid apparatus was carried out by Mr. Fredk. R. Butt, who is still actively engaged in the X ray industry.

Apparently the methods in question did not prove to be of sufficient practical advantage to survive. It may be, of course, that the system now proposed is of a more useful character, but we hope that you will find it possible to give publicity to this letter, as evidence of the priority of British X ray workers in the direction referred to.

We are, Sir, yours faithfully,

X-RAYS LIMITED.

47, Red Lion-street, High Holborn, W.C., March 8th, 1928.

THE POSITION OF THE VOLUNTARY HOSPITALS.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 25th, Dr. Graham Little fell into error when he deduced the existence of 3000 empty (reserve) poor-law beds from the figures of 19,000 "available" and 16,000 "occupied" beds. It would be just as fallacious to contend that because there are 14,472 available and 12,023 occupied voluntary hospital beds in London (vide King's Fund Report, 1926), therefore there are 2449 empty beds in the voluntary hospitals.

I am, Sir, yours faithfully,

RALPH B. CANNINGS,

March 15th. Secretary, City of London Maternity Hospital

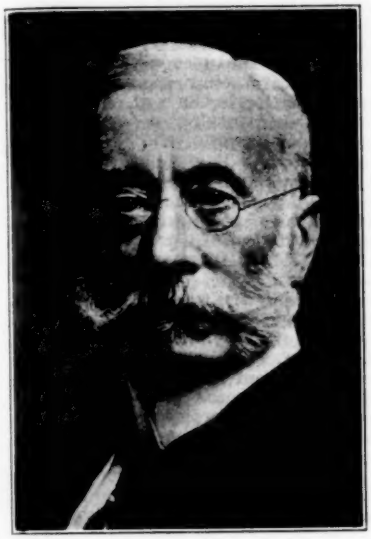
Obituary.

SIR DAVID FERRIER, M.D., D.Sc., F.R.S.,

EMERITUS PROFESSOR OF NEUROPATHOLOGY, KING'S COLLEGE, LONDON.

WE deeply regret to announce the death on Monday last of Sir David Ferrier, the veteran neurologist, whose researches date back from 1870, and whose personal labours by experiment and by writing have contributed, probably more than the work of any one man, to our modern knowledge of the functions of the brain. He died at York House, Kensington, in his eighty-sixth year.

David Ferrier was born on Jan. 13th, 1843, in a suburb of Aberdeen, was educated at the Grammar School of that city, matriculated at the University in 1859, and began his disguished career as a successful student of the humanities and philosophy; he won the first place in bursary examinations, graduated in arts with first-class honours in both his subjects, and gained also the Ferguson scholarship, the blue riband of young Scottish philosophers.



SIR DAVID FERRIER.

Photograph by Elliott & Fry.

The famous Alexander Bain, psychologist and logician, had been appointed some three years before Ferrier's graduation professor of logic in the University, upon the publication of his works on the Senses and the Intellect and the Emotions and the Will, and to him Ferrier attributed the early direction of his interests, for in 1864 he went to Heidelberg to study psychology, his medical work being commenced there more or less as an after-thought. But in 1865, on return to Scotland, he entered the Medical School of the University of Edinburgh, and three years later graduated in medicine at that University with all possible distinctions. Thomas Laycock, professor of practical medicine in the University, at once appointed him his assistant, and for a time Ferrier worked under Laycock, supplementing his resources by taking pupils. But he soon found the work distasteful—great expositor as he became, coaching for examinations was not his métier—and at this time he made the interesting decision to enter private practice. This experiment did not last long, but none the less it had an influence upon his future. His chief, William Edmund Image, a general practitioner in Bury St. Edmunds, was an unusually accomplished man, a bachelier-ès-lettres, as well as an F.R.C.S., and had not only a large practice in and around the old-fashioned city but a close personal acquaintance with many leaders of his profession in London. He recognised the extraordinary qualities of his assistant, and acquiesced in Ferrier's view that so purely a country environment did not offer the proper outlook, while, as Ferrier would admit when reminiscing, his coöperation in the day's work promised to be of no value to the practice. He himself has said that, with the hearty coöperation of Image, he spent the whole of his time at Bury St. Edmunds in researches in comparative anatomy, and their result was an M.D. thesis on the corpora quadrigemina for which he gained a gold medal in medicine in 1870. In the same year he returned to London at the instance of Prof. Burdon Sanderson, and after holding a post for a short time in the Middlesex Hospital medical school was appointed demonstrator of physiology at King's College, and commenced his famous association with that institution. In 1873 he became lecturer on medical jurisprudence at the hospital, succeeding shortly to the chair vacated by Prof. William Augustus Guy, and was soon appointed assistant physician to the hospital, as well as to the West London Hospital. His association with Prof. Guy is marked by the widely known treatise on forensic medicine, the later editions of which bore their joint names as authors.

From this time forward Ferrier carried on clinical practice while pursuing his investigations into the psychology of the brain. He was a pioneer in hitherto untrodden regions of scientific medicine, and his fame was enhanced by the malignant manner in which he was signalled out by the opponents of research for particular reprobation as a vivisectionist. The results of his studies were given to the world without delay in a series of papers embodying researches into cerebral physiology and pathology, in the Croonian Lectures before the Royal College of Physicians of London in 1874 on the Localisation of Function in the Brain, in further papers on the same subject in the Philosophical Transactions of 1875, and in the Goulstonian Lectures on the Localisation of Cerebral Disease in 1878. But before the delivery of these last lectures he had published in 1876 his important work "The Functions of the Brain," which was recognised at once as a path-making contribution to an obscure and difficult department of physiological and psychological inquiry. The work had its direct outcome from the experimental physiology of Fritsch and Hitzig, who had recognised that in dogs, by exposure of the cerebral hemispheres, and trephining or removing portions of the skull, they were able to call forth certain movements by stimulation of different regions. Ferrier made the whole subject his own, and while many of the facts recorded by him or ascertained by his experiments were tolerably familiar to a small class of observers, the teaching came as a revelation to medical practitioners. The book owed much to Ferrier's early friendship with Hughlings Jackson, for certain of the experimental investigation of brain function was made mainly for the purpose of testing Jackson's theories as to the causes of various forms of epilepsy, while among other sources of inspiration may be mentioned as invitation from Sir James Crichton-Browne, at the time superintendent of the West Riding Lunatic Asylum, to embody in the asylum reports the early results of his experiments. On the publication of this book he was elected F.R.S., and in the following year, the year in which he became assistant physician to the Hospital for Epilepsy and Paralysis, he was elected F.R.C.P. Lond. In 1880 he became physician to the National Hospital for the Paralysed and Epileptic, Queen-square, while at King's College a Professorship of Neuropathology was specially instituted for him.

Ferrier's work is summarised in respect of its clinical value in his clearly written essay on the regional diagnosis of cerebral disease, contributed to Allbutt and Rolleston's System. In this essay a knowledge is assumed of cerebral anatomy, the vascular supply, and the convolutional arrangement of the cortex, while intracranial morbid anatomy is not considered. Attention is focused upon regional diagnosis by considering whether a lesion be essentially irritative or destructive in character, and whether it be such as is calculated to exercise a disturbing influence on regions anatomically remote from the part actually invaded. Within the limits thus laid down by himself, Ferrier tells the story, with full references and documentation, from the time

when our knowledge was confined to a few empirical generalisations, made from the observation of certain forms of aphasia and of unilateral convulsions, up to the knowledge of to-day.

The following appreciations of Sir David Ferrier from Dr. Wilfred Harris and Dr. Kinnier Wilson show well the esteem and admiration which, as philosopher and man, he commanded in the scientific world; they are estimates which would be endorsed by all who had worked with Ferrier or along lines where he had preceded them, and form a noble testimony.

Dr. Wilfred Harris writes: "Ferrier had outlived all of that band of great men, his colleagues at the National Hospital, Queen-square. To the younger generation the names of Hughlings Jackson, Thomas Buzzard, Bastian, Gowers, David Ferrier, and perhaps even Victor Horsley are legendary, and do not naturally evoke the feelings of almost awe and reverence that those who were privileged to work with and for them 30 years ago used to feel for their chiefs. It was Hughlings Jackson's work in the 'sixties on theoretical cerebral localisation, the result of his study of unilateral fits produced by tumours of the brain, that led to the experimental work first by Fritsch and Hitzig in 1870, and shortly afterwards by Ferrier in the laboratories of King's College in the Strand. Hughlings Jackson's was the brain which conceived the theory of the motor functions of a specialised area of the cortex, following on Broca's demonstration of a motor area for speech in the left ascending frontal convolution. Ferrier's training as a physiologist, and his early attraction to the nervous system eminently fitted him as the man to put Jackson's theories to the acid test of practical experimentation on living animals, and though Hitzig had already published some work in this direction, Ferrier's researches were much more fully and methodically planned, using faradic stimulation to the cortex. Endowed with most capable hands and good operating technique, he brilliantly proved Jackson's theories to be right, and settled for all time the groundwork of experimental localisation of brain centres, work which was amplified and confirmed by the later researches of Beevor and Horsley, and more recently by Sherrington and Grunbaum, who had the opportunity of using numbers of anthropoid apes for their experiments. No experimenter worthy of the name escapes making mistakes, to be rectified later by himself or by others, and Ferrier's work in this most difficult field of research was hardly likely to be an exception to this rule. He described the seat of the half-vision centre to be the angular gyrus, as the result of his cauterisation of this centre being followed by hemianopia, and it was reserved for Sharpey-Schafer to demonstrate the now well-known half-vision centre around the calcarine fissure, and that Ferrier's lesions of the angular gyrus had also damaged the subjacent optic radiations. The anti-vivisectors not unnaturally raised a storm over Ferrier's work on dogs, and much ink was slung in the 'seventies and early 'eighties in obloquy of his name, which probably defeated their object by bringing the brilliant young experimenter's name to the notice of the public. Certain it is that for very many years afterwards his name was almost a household word, and his advice as a neurologist was sought far and wide. Though he was for years professor of forensic medicine at King's College, and wrote a work on this subject, it is entirely as a neuropathologist that his name will live. As a clinician he was quick and incisive, and his teachings, brief and clear cut, were perhaps more easily remembered than those of more fluent orators.

"Ferrier's last appearance in the rôle of head of British neurology was in 1913, when he presided at the dinner given to the foreign neurologists present at the International Medical Congress held in London. Though then 70 years of age he was still slim, dapper, and erect as always, and that he retained his interest in neurology for years afterwards was evidenced by his frequent appearance at scientific meetings. Up to the time of his severe illness when attacked by double pneumonia three years ago he still retained remarkable vitality and a comparatively youthful appearance. His death marks a milestone in neurology as the last of the pioneers in this field, but his work must remain as an immemorial monument to a keen brain quick to adapt the theories of the thinker and philosopher to the test of practical trial and experiment."

Dr. S. A. K. Wilson writes: "Sir David Ferrier was the last of the small and choice company of pioneers through whose labours the scientific neurology of to-day has come into being. Nearly 60 years have passed since he commenced researches on the functions of the central nervous system that brought him world-wide distinction, and made his name familiar wherever neurology was taught. With those of Hughlings Jackson, Horsley, and Gowers, it will ever take that honoured position in the memorials of neurological science reserved by common consent for the path-makers and the masters. He was witness of the transition of knowledge of the nervous system and its diseases from the state of empiricism and lucky guesses to its fruition in the fertile soil of accurate neuro-anatomy and experimentally proven neuro-physiology, and was himself one of the protagonists in this amazing revolution. The commonplaces of neural doctrine to-day were the discoveries of his early manhood, and we of a succeeding generation can appreciate but faintly the new world then revealed by the objective methods of precise cerebral experimentation. More than 40 years separate us from the International Congress of 1881, when Ferrier gave a brilliant demonstration of the novelties of cerebral function and localisation before the assembled savants of Europe; and 15 years, too, have elapsed since their successors hailed him at the Congress of 1913, as the doyen of English neurology. If in these later times his work was less often referred to, if the echoes of old controversies had long since died away, if clinicians and surgeons cultivated the neurological field without a thought of the wilderness whose place it took, a moment of quiet consideration would always bring to the mind of those who knew him and worked with or for him an impressive sense of the debt neurology owes to his imagination and to his persistence in following the path of minute and exact experimental research. Only a few of his friends are aware of the personal abuse which this line of investigation brought him, or of the extremes to which his opponents went in their endeavour to discredit his achievement.

"It is on his many services to the experimental physiology of the nervous system that his reputation rests securely, nor can it be diminished by any contention that the technique was comparatively simple and that the material lay ready to his hand and was only waiting to be utilised. Subsequent studies have not altered his conclusions fundamentally, even if the growing point of neurology has moved away somewhat from the rather schematic parallel he drew between excitation and response, between structure and function. To many of the younger generation he was known only as a clinician and clinical teacher, and this was possibly not the most original side of the man. A shrewd observer and a keen student of human nature, his contributions to clinical neurology are none the less by comparison not so memorable or so abundant. He had not Jackson's breadth of vision, or Gowers' faculty of patient and painstaking clinical scrutiny; what struck all those whose contact with him was of later period was his mental vigilance and his consuming desire for information. Long after his best years had passed he was still a frequent attendant at meetings of the Neurological Section, the College of Physicians, and the Royal Society, and within a few months of his death was still to be seen on occasion in the library of the Royal Society of Medicine. Nothing was more typical of Ferrier than this hunger for knowledge. On the day of Jackson's funeral in 1911, I walked away with him from the cemetery,

and after many minutes of silence, occupied with his own thoughts of his teacher and friend, he suddenly turned and said, 'well, when I cease to take an interest in things it will be time for me to go.' Those of us who were associated with him professionally and otherwise, who experienced his generosity or who knew a little of that side of him that was but seldom revealed, will like to think of Sir David Ferrier as one whose life illustrated in perfection, the meaning of the love of knowledge for its own sake, and who carried undimmed to the end the torch of science put into his hands 60 years before."

The honours which Ferrier received from various seats of learning sufficiently testify to the wide range of his fame. As early as 1878 he became a Lauréat of the Institut de France, while from the Royal Society he received the Marshall Hall prize in 1883, the Baly medal in 1887, and the Royal medal in 1890. The University of Edinburgh made him Cameron Prize-man and awarded him the Moxon medal; he was a D.Sc. of the University of Cambridge, and only last year received the honorary LL.D. from the University of Birmingham. At the Royal College of Physicians of London he was Harveian orator and Censor. He presided over the Neurological Society in 1894, and over the Medical Society of London in 1913. In connexion with the Neurological Society he was one of the founders and editors of *Brain*, the journal of that society, of whose prominent position he was always frankly proud, and to which he made so many noteworthy contributions.

Few leaders of the medical profession were better known in London to his colleagues than Ferrier; even when he had reached an advanced age his small, upright figure was to be seen regularly at professional gatherings, at social evenings, and in the drawing-room of the Athenæum. Though studiously quiet in voice and demeanour, and never desirous of joining in controversy or in asserting personal views, his conversation with friends was free, intimate, and amusing, for he preserved to the end of his long life an accurate memory, just powers of reflection, and keen appreciation of the ridiculous. Some three years ago he underwent a serious illness—one from which his advisers expected nothing but a fatal issue; but he made so perfect a recovery that his death will come to many as an unexpected event.

He married in 1874 Constance, daughter of Mr. Albert Waterlow, by whom he had one son, Mr. Claude Waterlow Ferrier, the well-known architect, and one daughter.

The funeral service was held yesterday (Thursday) at St. George's, Hanover-square, W.

MAYNARD SMITH, C.B., M.B.LOND., F.R.C.S.ENG.,

SURGEON TO ST. MARY'S HOSPITAL.

WE regret to announce the death of Mr. Maynard Smith, surgeon to St. Mary's Hospital, which occurred on March 18th in the fifty-third year of his age, sadly cut off at the zenith of a valuable life.

Sidney Maynard Smith was born on Sept. 20th, 1875, the son of a civil engineer, who also held an Admiralty appointment at Chatham. He was educated at Epsom College where he distinguished hinmself as a boy, gaining the entrance scholarship in natural science at St. Mary's Hospital, the institution with which he was closely connected throughout his professional career. He entered the school in 1893, qualified as L.R.C.P. Lond., M.R.C.S. Eng. in 1898, was appointed house surgeon the following year, and later became prosector and assistant demonstrator of anatomy in the medical school. In 1902 he proceeded to the F.R.C.S. and two years later graduated in medicine and surgery in the University of London. He became surgical registrar at St. Mary's Hospital in the same year, and also surgical tutor, and in 1906 was appointed surgeon to out-patients, acquiring shortly charge of the orthopædic department. He was also elected assistant surgeon to the Victoria Hospital for Children. In the meantime he had seen military service in the Boer War, for shortly after the outbreak of hostilities in South Africa he was appointed civil surgeon to the South African Field Force. Here he not only did good work but acquired the material for informing and accurate writing on head injuries and gunshot wounds, while he was decorated for his services. On returning to civil life he became lecturer on practical and operative surgery in the medical school of St. Mary's Hospital. He was also elected assistant surgeon to the London Fever Hospital, so that, with such training and opportunities, it is not surprising that he was now recognised as a leading surgeon, destined to go far in his profession. He contributed a series of articles on military surgery to the "Index of Treatment," and published papers on general surgery in the *Transactions* of the Medical Society, the *Journal of Anatomy and Physiology*, the *British Medical Journal*, and *The Lancet*, establishing his position as a sound clinician and consultant. Military and national duties again supervened.

In 1914 the European War broke out, and Maynard Smith went to France as surgeon-in-chief of the St. John Ambulance Brigade Hospital with the honorary rank of Major. The following testimony to his later work is given in the words of Major-General Sir G. Guise-Moores, who writes as follows:—

"I should like to bear testimony to the loss both the medical profession and the army have sustained by the death of Sidney Maynard Smith. Late in February, 1918, Sir Anthony Bowlby, then the Senior Consulting Surgeon to the British Forces in France, informed me, as D.M.S., Second Army, that we were to have the services of Maynard Smith as consulting surgeon. His skill as a surgeon had preceded him, and was known by his work at the Duchess of Westminster's Hospital at the Base. The Second Army, like many another, had been fortunate in its consultants, both surgical and medical, and it did not take long to make certain that in 'Maynard,' it possessed, besides surgical prowess, a man of sterling qualities of heart and mind. At his own request he was early permitted to pay occasional visits to the front line, to regimental aid posts, and to advance and main dressing stations. He soon acquired a sound judgment in what was essential to efficiency in the care, treatment, and evacuation of wounded. Anything short of this gave his gallant and kindly soul the deepest grief and concern. With any shortcoming he was never content until a remedy was found; and found it invariably was. At the casualty clearing stations where his chief work must necessarily be, his cheery presence was always welcomed, his advice eagerly sought, and his capacity for unobtrusive and arduous work recognised and appreciated, and in the short intervals between the 'crises' of incoming wounded, when alone it was possible to ponder and talk over things past and to come, we found in him a fund of quiet humour, a sense of timely loyalty, a gift of sage counsel, and an entertainment that goes with successful accomplishment."

His medical military career was throughout one of real distinction, as will be gathered from the above testimony and public acknowledgment. He was thrice mentioned in dispatches, gained the Croix de Guerre, and was appointed C.B. in 1918. And again his special experience enabled him to write with authority on many surgical and pathological conditions that had come under his notice in every variety of urgency and extremity. He contributed the section to the official medical history of the war on fractures of the lower extremity, the most valuable of his contributions to scientific literature.

To the smaller circle of his colleagues at St. Mary's Maynard Smith will be more than an ordinary loss, and will ever be remembered as much for his other qualities as for his surgery. He was an invaluable committee man, who never undertook the slightest service without giving of his utmost in energy, time and thought. His fresh outlook and wise judgment have many a time solved a knotty problem of hospital

routine. It did not need the war to prove his great abilities as an administrator, yet here they perhaps showed up at their best. He had a tidy mind which was reflected in all he did. He possessed an exquisite surgical technique, but his fingers were always guided by wise and thoughtful decisions.

Maynard Smith was the victim of a disease which from time to time gave warning that it only slumbered and one day would inevitably have its way. Yet very few even of his friends knew this: fewer still guessed that he knew it. He preserved his secret, and with extraordinary fortitude carried on his busy life, refusing to withhold such services as were constantly demanded of him by a teaching hospital and school. He will always be remembered with affection and admiration.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

INVALIDING FROM THE NAVY.

ON March 15th Lieut-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) dealt with the question of invaliding from the Navy, which was raised on a motion moved by Sir B. Falle last week when the House was "counted out." The previous debate, he thought, had showed that all sides of the House felt that there was something wrong. He could assure the House that the Admiralty were watching this matter very closely, but there was a great deal of misconception, not only in regard to the actual facts which were adduced in the debate, but also in regard to what the results would be if the new suggestion were adopted, and the question of deciding what was attributable and what was not were transferred from the medical authorities at the Admiralty to some outside body. He thought, personally—and he had taken a good deal of trouble in examining the whole system—that hon. Members who took part in the previous debate were unduly pessimistic about the present procedure. He agreed that from the psychological point of view there might be something in the suggestion that the officers and men themselves would be more satisfied if they had some kind of outside Board to which to go, but he would point out that the independent tribunals which they knew so well under the Ministry of Pensions were brought into existence to meet special circumstances arising from the war. It was then obvious that there were hundreds and thousands of cases in which the medical history of men could not possibly be ascertained in the ordinary way. Therefore it was probably quite necessary to set up those special tribunals. But in the case of a service like the Navy, in ordinary times, the medical history of a man was known from the first moment he came on board and his whole history was kept throughout his career, and the doctors before whom he came in the event of his being brought forward for invaliding were men who were perfectly familiar with the kind of service he had had, and were therefore better fitted almost than anyone else to judge whether the illness from which he was suffering was due to the service or not. He would also point out that such a man had on his side, as far as was possible, the doctors, and was given every chance of stating his case and of calling witnesses if necessary.

Mr. GROVES: I dispute that statement.

Procedure of the Board of Survey.

Colonel HEADLAM said he would tell the House exactly what the Board of Survey did. When an officer or rating in hospital or serving in a ship or establishment was considered to be unfit for further service he was brought forward for survey with a view to invaliding. Medical Boards of Survey were held twice in each month under the authority of the Commander-in-Chief or Senior Officer present. The Board consisted of the medical officer in charge of the hospital, who acted as president, and three medical officers, two of whom were senior medical officers of the hospitals and one a senior medical officer of the Fleet or depôt. It had been suggested that there should be an executive officer on the Survey Board. That matter had been very carefully considered by the Admiralty, and the general opinion was that nothing would be gained by reverting to a practice which was abandoned in 1914. The questions to be decided were of a purely medical nature and the presence of an executive officer would not strengthen the tribunal. He would either interfere with the medical officers in the performance of their duties or would be a mere figure-head and wasting his time.

Lieut.-Commander KENWORTHY: Could he not decide if the doctors disagreed?

Colonel HEADLAM said that if the hon. and gallant Member would wait he would see that that was provided for. The medical officer who brought the case forward appeared before the Board in order that the surveying officers might receive the fullest information concerning the case. A complete history of each case was made out, showing the details of the onset, course, and final state of the disability for which the patient was being surveyed. Prior to survey each officer or rating was given a form to fill in, on which he was requested to state what in his opinion was the cause of his disability. The Board of Survey was required to investigate and record an opinion whether the disability was attributable to, or aggravated by, service (pre-war, war, or post-war), and if not, to what specific condition it was attributed. Those reports of the Board of Survey, with a statement by the officer or man concerned, were sent to the Commander-in-Chief, who was an executive officer and who came to a decision with all the facts before him.

Dr. VERNON DAVIES: Are we to understand that the Medical Survey Board simply decide the case from the history sheets of the man, and however difficult the diagnosis may be, they form their opinion as to attributability or not purely on the record of the man's medical history?

Colonel HEADLAM said that the Board saw the man's statement and the man could put forward such evidence as he liked. After the decision of the Commander-in-Chief the case was sent to the Admiralty. Every case was carefully scrutinised and investigated by the medical authorities at the Admiralty, who examined all the records bearing on the case.

Mr. MACKINDER: It is done purely on the history of a man's case and not by personal examination.

Colonel HEADLAM: They have all the papers before them.

Lieut.-Commander KENWORTHY: Everything except the patient.

Medical Consultative Board and Hygienic Conditions.

Colonel HEADLAM said that he wished the House to understand that if there was any bias in a case of this kind, the bias was on the side of the man as far as the judges were concerned. In general, he would say that there was very little justification for the attacks that were made against the existing system. It might be perfectly fair to say that the rules by which these matters were judged were too severe and that the doctors were not given sufficient latitude, but to blame the existing authorities was not fair, and the charge that the Board of Admiralty was not the proper judge in the final resort in these cases had, he thought, not been substantiated. It was the rules that were of importance and not the tribunal. This, however, was a matter which the Admiralty agreed required the most careful attention. They were looking into it from every aspect. Not only was there a Joint Committee sitting now, and examining the question of attributability in all its aspects, but they had referred the whole question as regarded hygienic conditions in the Navy to a special Medical Consultative Board of outside specialists and they were awaiting the reply from those specialists to guide them to a certain extent in the policy that they should pursue. They felt that the present system as regarded invaliding and the adjudication of attributability or otherwise was a fair one, but they wanted to be perfectly sure. They realised that the health of the Navy was of primary importance. It was, however, very easy to exaggerate the facts about tuberculosis in the Navy. The truth was that the incidence of the disease seemed to be rather less in the Navy than in civil life. They knew more about it in the Navy because the conditions of inspection were such that they found out the cases very early, whereas in civilian life they might escape observation for a considerable period of time. He could assure the House that they were fully alive to the situation.

The motion was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 14TH.

Infant Mortality and Under-nourishment.

Major ROPPER asked the Minister of Health whether he had now received the reports of the medical officers of health for Houghton-le-Spring and Chester-le-Street; and whether they showed that there had been any increase in the infant mortality-rate due to want of proper food and nourishment of mothers and children.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: My right hon. friend has received reports from the medical officers of health of the districts mentioned. The infant mortality figures for these districts during 1927 have just reached me and show a small increase in each district as compared with 1926, though the rates were lower than

for the years 1924 and 1925. Only the report of the M.O.H. for Houghton-le-Spring suggested under-nourishment as one of the causes of the increase, and his report was not written until Feb. 22nd. My right hon. friend is advised that other medical authorities in Durham attribute the temporary increase in infant mortality in that county during the last few months of 1927 to the exceptional prevalence of bronchitis and pneumonia.

Maternal Mortality.

Sir ROBERT THOMAS asked the Minister of Health whether, in view of the lack of improvement in the maternal mortality-rate, he would, with a view to creating a more efficient maternity service, consider the advisability of modifying the present maternity benefit in such a way as to provide medical and nursing services in addition to a cash payment, and of linking up such services with maternity and child welfare work of local authorities.—Sir KINGSLEY WOOD replied: The question of the advisability of modifying the present arrangements for maternity benefit under the National Health Insurance Scheme in the direction indicated by the hon. Member was raised at a recent meeting of the Approved Societies Consultative Council and was referred by them to a special Subcommittee. As soon as my right hon. friend receives the report of the Council on the subject, it will have his most careful consideration.

Mr. GREENWOOD asked the Minister of Health whether he had been informed of a resolution passed on Feb. 28th, at a meeting of 600 representatives of local authorities and voluntary societies in touch with the problem of maternal mortality, at which attention was called to the urgent need for medical inquiry into all deaths due to childbirth, further training and experience in midwifery as a preliminary to general practice in medicine, the appointment of an official committee to advise upon the whole question of the training and employment of midwives, action to induce local authorities to make their maternity services adequate, the readjustment and extension of national health insurance so that medical and midwifery services should be available for mothers, both for antenatal care and during and after confinement; and whether, in view of the fact that 3000 mothers died in childbirth annually, and many were injured, he could see his way to taking immediate action on the lines suggested by the conference.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, I had already had these matters under consideration in connexion with the recent report issued by my Department on the "Protection of Motherhood," and I am taking the necessary action to give effect to the recommendations contained in that report on the first four points mentioned in the question. As regards the health insurance point, I would refer the hon. Member to the answer given yesterday on this subject to the hon. Member for Anglesey.

New Method of Paying Pensions.

Captain FRASER asked the Minister of Pensions whether he had in contemplation any changes in the method of paying war pensions; what those changes were and when they would be introduced; what classes of pensioners would be affected; what objects he hoped to achieve by the changes; and whether the ex-service man's associations had been consulted.—Major TRYON replied: An important change in the method of payment of war pensions will come into operation next week. The pensioners affected will be all those whose pensions are paid weekly through the Post Office—namely, those of disabled men, their widows and dependants. The central feature of the new system of payment will be the discontinuance of identity certificates, or ring papers. These documents will be surrendered to the Postmaster for cancellation and withdrawal, and the pensioner will receive instead a book of orders, on presentation of which payment will henceforth be made each week at the appropriate Post Office. The new system will be essentially the same as that already in use for old-age pensions and for widows' contributory pensions. It is estimated that a substantial reduction in administrative costs will be secured by the extension of this system to war pensions, but, while the object in view has been uniformity and economy in administration, I am satisfied that pensioners will find the new arrangements simple and convenient. The ex-Service representatives on the Standing Joint Committee and a representative of St. Dunstan's have been consulted on this aspect of the matter and have expressed their approval of the change. No change is at present contemplated in the arrangements for paying the pensions of officers or nurses, or of officers' widows or dependants.

Drunkenness in London.

Mr. BRIANT asked the Home Secretary the number of proceedings for drunkenness and convictions for drunkenness, male and female, in the Metropolitan police district and the City of London for the calendar years 1918 to 1927 inclusive.—Sir WILLIAM JOYNSON-HICKS replied: All available figures in this connexion are published annually in the Volumes of Licensing Statistics, the latest of which is for the year 1926. As regards the year 1927, the figures are not yet completely compiled, but I can give provisional figures as follows: In the Metropolitan Police District the total number of proceedings was 30,123, leading to 21,177 convictions of males and 5977 of females, and in the City of London the figures were 411,293 and 84 respectively. The following is a statement of proceedings and convictions for drunkenness in the Metropolitan Police District and City of London during the years 1918 to 1926:—

Year.	Metropolitan Police District.*				City of London.			
	Proceedings.	Convictions.			Proceedings.	Convictions.		
		M.	F.	Total.		M.	F.	Total
1918 ..	11,358	6690	3211	9901	294	194	44	238
1919 ..	23,683	15,486	5188	20,674	446	322	57	379
1920 ..	33,185	23,581	6375	29,956	491	399	44	443
1921 ..	30,091	21,916	5494	27,410	416	329	49	378
1922 ..	33,912	24,389	6410	30,799	557	432	102	534
1923 ..	32,983	23,414	6610	30,024	498	396	70	466
1924 ..	33,018	23,512	6536	30,048	426	332	57	389
1925 ..	32,900	23,197	6384	29,581	442	334	60	394
1926 ..	32,010	22,631	6226	28,857	388	269	48	317

* This district consists of the Counties of London and Middlesex, and parts of the Counties of Essex, Hertford, Surrey and Kent, including the County Boroughs of East Ham, West Ham, and Croydon. M. = Male; F. = Female.

Health Conditions in Artificial Silk Factories.

Mr. KELLY asked the Home Secretary whether the Home Office had received any reports as to the conditions of health of workpeople employed in artificial silk factories; and, if so, would he make known to the House his decision on these reports.—Sir WILLIAM JOYNSON-HICKS replied: I have received reports by the Medical and other Inspectors of Factories who have been visiting these works. It appears from these reports that the conditions generally are satisfactory, but cases of conjunctivitis have occurred at one or two works, and there have also been some cases of dermatitis. Suitable precautions are being taken in each case and the hon. Member may be assured that the conditions will continue to receive the special attention of the Medical Staff.

Notification of Diphtheria.

Dr. VERNON DAVIES asked the Minister of Health if he would issue a circular to all local authorities, pointing out that, in view of the difficulty of diagnosing diphtheria and the desirability of immediate treatment, it was advisable for medical practitioners to notify suspicious cases without waiting for the results of the bacteriological examination, even though, as a consequence of this practice, a percentage of cases eventually proved to be non-diphtheritic.—Mr. CHAMBERLAIN replied: The difficulty in giving effect to the suggestion of my hon. friend is that the obligation on medical practitioners under the Infectious Disease (Notification) Acts is to notify patients actually suffering from infectious diseases. I could not accordingly issue such a circular as he suggests without an alteration of the law.

Approved Societies and Additional Benefits.

Mr. RHYS DAVIES asked the Minister of Health how many approved societies had been compelled to abandon their schemes of additional benefits through lack of funds, temporarily or otherwise, since the results of the last valuation were declared; and the approximate number of insured persons covered by those societies.—Mr. CHAMBERLAIN replied: No approved society has been compelled through lack of funds to abandon its whole scheme of additional benefits, but about 100 societies (covering a total membership of between three and four million insured persons) which have included dental and ophthalmic benefits in their schemes, have found that the demand for those benefits amongst their members has so far exceeded the expectation that the amounts allocated to the benefits for a particular year have been exhausted before the end of the year, and they have consequently been obliged to defer the authorisation of claims until the beginning of the following year, when further money became available. In nearly every case the authorisation of claims for the benefits has now been resumed.

Surplus Milk and Necessitous Areas.

Mr. BENJAMIN SMITH asked the Minister of Health whether his attention had been called to the considerable surplus of milk produced annually in excess of the quantity retailed for human consumption; and whether he would consider the question of organising arrangements for supplies

to be placed at the disposal of medical officers of health in necessitous areas for distribution to children and sick persons.—Mr. CHAMBERLAIN replied: I understand that the facts are as stated in the first part of the question. As regards the second part, local authorities are empowered to supply milk for expectant and nursing mothers and young children who are medically certified to need a supply on grounds of health.

Pregnant Women and Sickness Benefit.

Dr. VERNON DAVIES asked the Minister of Health if he was aware that many employers refused to allow insured women employees to remain at work during the late months of pregnancy; and if under these conditions such women were granted sickness benefit under the National Health Insurance Regulations.—Mr. CHAMBERLAIN replied: I am aware that some employers do not allow their women employees to remain at work when in an advanced stage of pregnancy. Any such rule of her employer does not in itself entitle an insured woman to sickness benefit under the National Health Insurance Act, but if she can produce medical evidence, to the satisfaction of her approved society, that she is incapable of work, she would be entitled to benefit.

National Health Insurance Dental Treatment.

Mr. HURST asked the Minister of Health whether persons insured under the National Health Insurance Act were to be deprived of their free choice of dental attendant, of the advantages of private treatment, and to be given institutional treatment at clinics in lieu thereof? Mr. EDMUND WOOD asked the Minister of Health whether it was his intention to set up dental clinics under the National Health Insurance Bill; and, if so, whether this would in any way affect the right of the insured contributor to choose his own dental attendant.—Mr. CHAMBERLAIN replied: Approved societies are not at present empowered to establish dental clinics for the provision of dental treatment for their members, but some societies are of opinion that in large industrial centres the setting up of dental clinics might be attended with some advantages. The question has been very fully considered by the Dental Benefit Joint Committee, which is composed equally of representatives of the dental profession and of approved societies of all types, and that Committee has recommended that in order to test the desirability of this form of treatment, one or more experimental clinics should be set up. Under the National Health Insurance Bill now before the House, provision has accordingly been included which would enable this to be done, subject to regulations which would have to be laid before Parliament. There is, however, no intention of making it compulsory upon any insured person to obtain his treatment in a clinic if he would prefer to be treated by a private practitioner, and I am satisfied that freedom of choice of dentist must be retained as a cardinal principle in any arrangements that may be made.

Welfare of Blind Persons.

Captain FRASER asked the Minister of Health if he would adopt the recommendations, on pages 17 and 18 of the seventh Report of the advisory committee on the welfare of the blind, that a detailed inquiry should be made into the financial and other circumstances of the 31,667 so-called unemployable blind persons in England and Wales.—Mr. CHAMBERLAIN replied: Yes, Sir, I propose to ask the local authorities concerned to furnish me with the return suggested by the Advisory Committee.

FRIDAY, MARCH 16TH.

Diphtheria Epidemic at Whittlesey.

Mr. DAY asked the Minister of Health the number of deaths that had occurred through the diphtheria epidemic at Whittlesey, in Cambridgeshire.—Mr. CHAMBERLAIN replied: Since the beginning of this year three deaths from diphtheria have been registered in the Urban District of Whittlesey.

MONDAY, MARCH 19TH.

Infantile Mortality in the Colonies.

Sir JOHN POWER asked the Secretary of State for the Colonies whether in recent years there had been any general decrease in the infantile mortality in the colonies, protectorates, and mandated territories in Africa; and whether any special efforts were being made to deal with the problem of infant mortality in other countries.—Mr. AMERY replied: It is exceedingly difficult as yet to obtain reliable returns of births and deaths among the populations of tropical Africa, but in areas from which the returns may be regarded as fairly accurate, as in the Buganda kingdom of the Uganda Protectorate, and in certain West African towns, there is evidence of slow improvement in the infant mortality-rate. In most areas, however, the rate remains regrettably high. The Governments of tropical Colonies are fully alive to the importance of this matter. Infant welfare clinics are being established and women doctors, nurses, and health visitors appointed for special duty; the work of these officers, notably in Malaya, the Gold Coast, and Sierra Leone, has been of a high order. In this connexion I would specially mention the work of voluntary agencies, such as the Child Welfare League of Kenya and the Child Welfare Society in Singapore, and the efforts which have been made in the West Indian Colonies to deal with this problem.

Employment of Women in Indian Mines.

Lieut.-Commander KENWORTHY asked the Under Secretary of State for India how many women, approximately, are employed underground in the Indian mines.—Earl WINTERTON replied: The average number so employed daily in 1926 was 31,889. The Government of India are considering making regulations to prohibit the employment of women underground by progressive stages in certain classes of mine (including the chief coal mines) and forthwith in others.

Disabilities of Naval Recruits.

Replying to Mr. HORE-BELISHA, Lieut.-Colonel HEADLAM (Parliamentary Secretary to the Admiralty) said: The disabilities for which recruits to the Royal Navy and Royal Marines were discharged within 12 months of their engagement during the years 1926 and 1927, are shown in the following list:—

Disease or injury.	*1926.*	*1927.*
Diseases caused by infection:—		
Pneumococcal infection (lungs)	4	1
Rheumatic fever	6	8
Tuberculosis (pulmonary)	11	7
Tuberculosis (non-pulmonary)	3	5
Other diseases caused by infection	3	3
Nervous and mental diseases:—		
Diseases of spinal cord	1	1
Paralysis	—	1
Epilepsy	9	5
Neurasthenia	3	4
Other nervous diseases	11	15
Insanity	2	4
Diseases of the eye	34	24
Diseases of the ear	66	66
Diseases of the nose	—	2
Diseases of circulatory system:—		
Diseases of the heart (organic)	29	32
Diseases of the heart (functional)	2	6
Diseases of the arteries	1	1
Diseases of the blood and spleen	1	—
Diseases of the lymphatic system:—		
Other diseases	—	1
Diseases of glands and internal secretion	4	2
Diseases of the respiratory system:		
Bronchitis	—	2
Asthma	2	2
Fibrosis of lung	3	4
Pleurisy	3	2
Other diseases	1	—
Diseases of the digestive system:—		
Diseases of teeth and gums	2	3
Mouth, palate, fauces, pharynx	1	—
Tonsillitis	2	—
Diseases of the stomach	—	1
Diseases of the intestines	1	—
Hernia	3	1
Diseases of rectum and anus	—	1
Diseases of generative system:		
Varicocele	—	3
Diseases of organs of locomotion:—		
Periosteum and bone	1	—
Cartilage and joints	2	1
Spine	1	—
Muscles, fascie, tendons, bursæ	—	1
Deformities of limbs	11	14
Diseases of aerolar tissue and skin:—		
Eczema	1	1
Other diseases of skin	—	2
Diseases of urinary organs:—		
Kidneys	5	5
Ureter and bladder	—	2
Urinary disorders	22	12
New growths, non-malignant	1	—
Local injuries, injuries and wounds	9	5
Totals	261	250

Smoke Abatement.

Mr. NAYLOR asked the Minister of Health whether he could give particulars showing to what extent county councils and sanitary authorities in England and Wales had availed themselves of the powers given them under the Public Health (Smoke Abatement) Act to take proceedings and to pass by-laws respecting smoke abatement.—Sir KINGSLEY WOOD replied: By-laws respecting the emission of smoke have been made by 14 local authorities and confirmed. I have no particulars as to the extent to which local authorities generally have taken proceedings, but a good deal of useful work is being done.

Mr. NAYLOR asked the Minister of Health whether, as the result of his circular to county councils and sanitary authorities, drawing their attention to the Public Health (Smoke

Abatement) Act, 1926, any regional committees, with either executive or advisory functions, had been formed.—Sir KINGSLEY WOOD replied: Two regional advisory committees and one executive committee have been set up since the issue of the circular, in addition to two advisory committees previously appointed. A committee has also been appointed by a conference of representatives of local authorities to report on questions of smoke abatement in the Greater London area.

Medical News.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.—PART I.

Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—•A. G. Thompson, •Lilla M. Spiller, T. B. M'Mahon, C. M. Taylor, M. E. Kirwan, R. P. M'Garrigle, E. B. A. Solomons, and J. E. R. Keyms.

PART II.

Medicine.—•F. G. Stewart, •D. S. P. Wilson, H. S. Smithwick, Marie M. E. Lea-Wilson, F. O. W. A. Mahon-Daly, G. W. F. Pratt, William Crawford, H. E. Knott, E. S. Adderley, Hyman Dundon, A. G. C. Ffolliott, A. A. Morgan, H. R. F. Tweedy, E. du Plessis Meiring, H. J. Robinson, R. F. W. K. Allen, A. J. Burden, C. R. Harris, G. Q. Chance, and L. R. H. Keatinge.

Surgery.—•F. G. Stewart, J. E. Wells, Julius Sayers, A. G. C. Ffolliott, Kenneth Watson, D. M'M. Carson, E. K. Malone, A. C. C. Charles, J. R. Hanna, Christina M'Donald, William Crawford, Wilfreda D. C. T. Pigott, H. E. Knott, L. R. Brumberg, A. A. Morgan, C. R. Harris, and C. M. O'Brien.

Midwifery.—•C. P. Martin, •F. R. Falkiner, •I.W. Pigott, Cecil King, J. T. M'Ginn, R. M. Wilson, J. F. K. MacCarthy-Morrogh, J. E. M'Mahon, A. R. Ewart, H. S. North, R. H. Bland, Mollie Finegan, C. E. G. Nunns, J. A. Dowds, and A. J. Burden.

• Passed on high marks.

RUSSIAN CONGRESS OF RADIOLOGY.—The fifth Congress of Radiology of the U.S.S.R. will be held at Kiev from May 19th to 23rd. Among the subjects of discussion will be (1) changes in cells under the influence of rays; (2) the classification and radiodiagnosis of diseases of the joints; (3) the functional and anatomical changes in the gastro-intestinal canal after operation; and (4) the radiotherapy of diseases of the blood-forming system. Those wishing to read papers should send a résumé of the proposed communication to the Secretary before April 15th. The medical men in charge of the arrangements are anxious to see their foreign colleagues at the Congress, and will procure the necessary permits for arrival and departure, besides providing for comfortable quarters at Kiev. Correspondence should be addressed to the Secretary, Dr. B. M. Berenstein, Kiev (U.S.S.R.) Roentgen Institut, 7, Leon Tolstoi-street.

MEDICAL SOCIETY OF LONDON.—The 155th anniversary dinner, held at the Trocadero Restaurant, under the chairmanship of its President, Mr. Herbert W. Carson, was attended by about 135 guests and members. Lord Carson, proposing the toast of the Society, testified to the growing understanding and goodwill between the legal and the medical professions, who coöperated in many ways. One vital question, however, on which they would soon have to get together was the legal definition of insanity. The legal profession, after doing their best, had been able to come to no better conclusion than that the lunatic was a person of unsound mind; that was the only definition that Parliament had been able to give, and that was the legal definition to-day. Lord Carson had found doctors at their worst in the witness-box; he often felt inclined, he said, to invite the medical men who appeared for one or other side to walk over to his chambers for a private conference, when he felt sure they would leave agreed. The President, in his reply, said that the Society had admitted 100 new Fellows in 1927. The lease on their present premises expired in 14 years, and they would then be faced with the expense of finding new premises. For the last 100 years, he said, the manuscript of John Ward's diary had been lying in the Society's safe. This was not a medical work, but a commonplace book, written by a vicar of Stratford-on-Avon some 40 years after Shakespeare's death and containing many references to the social life of London and Stratford-on-Avon at the time of the poet. It would be put up for auction at Sotheby's in April, when he hoped the manuscript would not leave the country. The toast of "The Visitors" was proposed by Sir John Rose Bradford, and responded to by Surgeon Vice-Admiral Gaskell and Dr. F. G. Crookshank.

UNIVERSITY OF OXFORD: *University College.*—Mr. Pat. C. Mallam, B.M., of Queen's College, has been elected to a Radcliffe Travelling Fellowship of £300 a year. It is tenable for two years, during 15 months of which the holder must engage in foreign travel and study. Dr. Mallam was formerly President of the Oxford University Boat Club, and was subsequently a student and resident at St. Mary's Hospital.

UNIVERSITY OF ABERDEEN.—The Senatus has resolved to confer the degree of LL.D. on Dr. J. A. MacWilliam, F.R.S., Emeritus Professor of Physiology of the University.

LONDON VEGETARIAN SOCIETY.—The First Arnold Hills Memorial Lecture will be delivered by Dr. B. P. Allinson, the President, in the hall of the Royal Society of Arts, John-street, Adelphi, W.C. 2, on Monday, March 26th, at 8 P.M. His subject will be Vegetarianism and Modern Medical Science, and admission will be free.

CONGRESS OF THALASSOTHERAPY.—As already announced, the fifth International Congress of Thalassotherapy will be held at Bucharest and Constanza from May 21st to 29th. The Roumanian authorities have placed at the disposal of the Privy Council a limited number of invitations to, and programmes of, the Congress, and these will be sent to any duly accredited delegate on application to the Council.

MELBOURNE HOSPITALS.—To avoid overcrowding of the Melbourne hospitals the Government of Victoria is about to provide 460 additional beds and to establish a clinical hospital in connexion with the Melbourne University. The latest statistics show that the present accommodation of the Melbourne hospitals is between 1300 and 1400. The cost of the additions will be £460,000, to which the public will be asked to contribute. The Children's Hospital at Melbourne is also extending, an orthopædic section being in course of erection at Frankston, 26 miles from the town. This hospital will have accommodation for 100 patients, and is to include 12 beds for isolation and observation cases.

IRISH MEDICAL SCHOOLS AND GRADUATES ASSOCIATION.—The jubilee banquet of this Association was held on St. Patrick's Day, Saturday, March 17th, at the Savoy Hotel, London, Mr. G. W. Dawson, F.R.C.S.I., presiding, when the principal guest was General Sir Hubert de la Poer Gough. After the loyal toasts, the President carried out the interesting ceremony of presenting the Arnott memorial medal to Lieut.-Colonel W. P. MacArthur. Mr. Dawson, in introducing Colonel MacArthur to the audience, said that the Arnott medal was given in recognition of signal service to the world by a medical man, and he knew that he need not dwell upon the claims to the award of the professor of tropical medicine in the Royal Army Medical College. Colonel MacArthur was well known alike as a scientific worker, where his studies in parasitology had been especially valuable, and as a medical historian. Colonel MacArthur, who stated, amidst cheers, protests and laughter, that he came from the "black north," firmly supported his country as a national entity, though he admitted that when he had attempted to talk Irish in Ireland no one understood him—he was considered to be speaking Chinese. A second presentation followed of an illuminated address to Dr. William Douglas, who was an original councillor of the Association, having served on that body for 50 years. Colonel G. Moore, M.D., past chairman of the council, introduced Dr. Douglas as a veteran friend, and Dr. Douglas, in thanking the Association for the honour done to him, owned also to being from the "black north," while he sketched in a few words the development of Belfast from the days when he first remembered it until now. The toast of "The Guests" was proposed by Wing-Commander William Tyrrell, who wished that the company had chosen a better vehicle than himself for informing the company of the merits of Sir Hubert Gough, their principal guest, and of Mrs. Claude Beddington, whom he also associated with the toast as a well-known Irish woman, a patron of the art of music. The Gough family, said Wing-Commander Tyrrell, was a famous one in Ireland, and the value of their military services to the Empire had been marked by two V.C.'s and much campaigning. Their guest, himself the son of one of those V.C.'s, possessed numerous military distinctions and decorations, earned in India, South Africa, and the late war, when he commanded the Fifth Army. Sir Hubert Gough, in a brief reply, said that he was obeying an indication from the Chairman that politics were to be eschewed, while, for his own part, he regarded Ireland as one country and the British Empire as the brightest jewel in the Irish Crown. Mrs. Beddington's reply took the form of a series of Irish stories admirably told. The closing toast of "Prosperity to the Association," coupled with the name of the President, was proposed by Dr. Bertram Watson. The speaking was interspersed with songs by Miss Mary Sheridan, Mr. Patrick Hughes, and Wing-Commander Tyrrell.

NATIONAL UNIVERSITY OF IRELAND: *University College, Cork.*—Dr. E. V. Cantillon has been appointed lecturer in materia medica, and Dr. T. Donovan lecturer in therapeutics. It is understood that the Chair of Materia Medica and Therapeutics will not be filled.

UNIVERSITY COLLEGE HOSPITAL.—The Duke of Bedford, who is retiring from the office of president, which he has held for 30 years, appeals for £30,000 to clear off the accumulated debt before he is succeeded by Prince George, the new president. During the Duke's term of office the hospital has increased from 200 to 525 beds.

HOSPITAL EDUCATIONAL LECTURES.—King Edward's Fund reports that over 50 institutions have taken advantage of the educational lectures for schools and colleges upon hospital work. The scheme has been an undoubted success, and the London County Council has given permission for children from the central schools to attend the lectures, and will add to its general catalogue of slides duplicates of those used in the lectures.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of this association will be held on Thursday, March 29th, at 3 P.M., at the Clothworkers' Hall, Mincing-lane, London, E.C. Sir Charles Wakefield, the President, will take the chair, and the speakers will include Lord Sandhurst, the Lord Chancellor's Visitor in Lunacy, Sir Frederick Willis, chairman of the Board of Control, and Mrs. Dunn Gardner, chairman of the L.C.C. Mental Hospitals Committee.

DIPLOMA IN PUBLIC HEALTH.—A three months' course of lectures and demonstrations on clinical practice and in hospital administration has been arranged by the Metropolitan Asylums Board. It will be given by Dr. F. H. Thomson at the North-Eastern Hospital, St. Ann's-road, Tottenham, N. 15, on Mondays and Wednesdays at 4.45 P.M., and alternate Saturdays at 11 A.M., beginning on Wednesday, April 11th. Particulars may be had from the Clerk to the Board, Victoria Embankment, London, E.C. 4.

KING GEORGE'S HOSPITAL.—Owing to an extension of the radius of the operations of King Edward's Hospital Fund for London, the London County Council have found it possible to devise a scheme for a hospital to serve the Thames-side area, which contains the Becontree Estate. With the support of the Fund, and the concurrence of the Ministry of Health, a new voluntary general hospital, containing from 300 to 400 beds, will be erected at Becontree. A letter has been received from the Home Secretary stating that the King has approved of the new hospital being known as "King George's Hospital."

TUNBRIDGE WELLS HOSPITALS.—This is the centenary year of the Tunbridge Wells and Counties General Hospital at Tunbridge Wells, and it is to be marked by the commencement of the erection of a hospital of 150 beds and to include a special wing to amalgamate the local Eye and Ear Hospital. The cost approximately will be £80,000, but of this figure a large sum will accrue from the sale of the General Hospital.

HOSPITAL SAVING ASSOCIATION.—This association has published figures showing the increased importance of direct contributions from patients to the funds of voluntary hospitals on the lines recommended by Lord Cave's Committee. For July, 1924, the membership of the association was 62,390, and in July, 1927, the number had increased to 351,865. The total membership is now over 400,000. In July, 1924, the sum distributed to hospitals was £14,032, while for 1927 it reached £153,670. These sums were paid to hospitals as special contributions in respect of the cost of the treatment of members of the association or of their dependants.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION.—A meeting of this Association will be held at Bologna on Wednesday, April 11th, and will be followed on April 12th, 13th, and 14th by an open meeting, to which all women doctors are invited. The subjects for discussion will be (1) medical measures for the protection of children and young persons in the various countries, (2) diseases of the eye in relation to general medicine. A large attendance is expected from the 22 countries which are at present affiliated to the association, as well as from other countries which are hoping to form organisations. The Italian railway authorities have granted special facilities, and various entertainments have been arranged, including a reception by the municipality and a dinner at the local Fascist headquarters. The Italian Association of Women Doctors is holding its annual meeting during the same week, and wishes to convey to the medical women of all countries a message of welcome to Bologna. Further particulars may be had from the hon. secretary of the association, Miss Martindale, M.D., 28, Weymouth-street, London, W. 1.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, March 26th.—8 P.M., ODONTOLOGY, ELECTRO-THERAPEUTICS. Special discussion on the Pulpless Tooth. Speakers for the Section of Odontology, Mr. Frank Coleman (opener), Mr. Owen C. Morphy, Mr. A. T. Pitts, Dr. A. Livingston, Mr. St. J. Steadman, Mr. B. Mendleson, and Mr. A. F. MacCallan; for the Section of Electro-Therapeutics, Dr. H. M. Worth (opener), Dr. G. Murray Levick, Dr. Meyrick Jones, Dr. J. F. Brailsford, Mr. Norman Grellier, Dr. A. C. Jordan, and Dr. B. G. Batten.

TUESDAY.—5 P.M., MEDICINE. Papers: Dr. F. Parkes Weber: A Note of Idiosyncrasies and Abnormalities in Human Beings. Prof. D. W. Carmalt-Jones: New Zealand View on Goitre.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Short Papers: T. Dalling, J. H. Mason, and W. S. Gordon: (1) Intradermic Tuberculin Testing in Cattle; (2) Transference of Maternal Immunity in Sheep. J. W. Trevan: The Present State of Knowledge of Sex Hormones. H. J. Parish: B.C.G. Experiments in Guinea-pigs. C. C. Okell: Diphtheria Infections and Diphtheria Immunity in Horses.

THURSDAY.—8.15 P.M., PSYCHIATRY. Members of the Medical Section of the British Psychological Society have been invited to attend this meeting. Discussion on the Ætiology of Alcoholism. Openers: Dr. Bernard Hart and Dr. Edward Mapother (for the Section of Psychiatry); Dr. Edward Glover and Dr. Crichton Miller (for the British Psychological Society).

MEDICAL SOCIETY OF LONDON, 11 Chandos-street, Cavendish-square, W.

MONDAY, March 26th.—8.30 P.M. Advances in the Treatment of Cancer of the Cervix Uteri. Discussion to be introduced by Dr. Herbert Spencer and Dr. Max Cheval, of Brussels.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, March 30th.—8.30 P.M., Mr. Eardley Holland and Dr. F. H. Lacey: The Antenatal Treatment of Venereal Disease—Gonorrhœa (second meeting). A discussion will follow.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, March 28th.—4.15 P.M. (at St. John's Hospital, 49, Leicester-square), Clinical cases. Dr. R. Craik: Monilia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, March 27th.—5 P.M., Dr. J. S. Collier: Epilepsy. (Lumleian Lecture (2).)

THURSDAY.—5 P.M. (Lumleian Lecture (3)).

ROYAL INSTITUTION, Albemarle-street, W.

THURSDAY, March 29th.—5.15 P.M., Group-Captain Martin Flack: Physiological Aspects of Flying (2).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, March 26th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 3 P.M., Sir Henry Simson: Gynæcological Ward.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, March 29th.—4 P.M., Mr. A. T. Pitts: Oral Hygiene.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, March 26th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Tuesday, at 2.15 P.M., and Thursday, at 2.30 P.M., there will be special demontrations of Medical and Surgical Cases by Dr. F. G. Crookshank and Mr. H. W. Carson respectively.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, March 26th, to SATURDAY, March 31st.—HAMPSTEAD GENERAL HOSPITAL, Haverstock Hill, N.W. Practitioners' course in medicine, surgery, and the specialties. Mon. to Fri., 4.30 to 6 P.M., lecture and demonstration.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. All day course—clinics, operations, and lectures.—Further particulars from the Secretary, Mayfair 2236.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, March 27th.—5 P.M., Dr. A. C. Roxburgh: Scleroderma. Neurofibromatosis.

THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Diseases of the Nails.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, March 30th.—4 P.M., Mr. Archer Ryland: The Musculature of the Vocal Cords.

PEOPLE'S LEAGUE OF HEALTH.

FRIDAY, March 30th.—6 P.M. (at the Medical Society's Rooms, 11, Chandos-street, Cavendish-square, W.), Mr. Eric Holmes: Common Errors in Daily Life.

CHADWICK PUBLIC LECTURES.

FRIDAY, March 30th.—8.15 P.M. (at the Royal Institute of British Architects, 9, Conduit-street, W.), Dr. R. E. Stradling, Assoc.M.Inst.: Balbus Built a Wall. (Blossom Gift Lecture.)

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street, Manchester.

THURSDAY, March 29th.—4.15 P.M., Mr. P. G. McEvedy: Treatment of Thyroid Adenomata.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, March 27th.—4.15 P.M., Mr. P. R. Wrigley: Intestinal Obstruction.

FRIDAY.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

Appointments.

Queen Charlotte's Maternity Hospital: ROSS, G. A., M.B., Ch.B. Aberd., Senior Resident Medical Officer; LOWRY, H. C., M.B., Ch.B., F.R.C.S., Assistant Resident Medical Officer; MORGAN, Miss G. M. B., M.B., B.Ch., District Resident Medical Officer.

Certifying Surgeons under the Factory and Workshops Acts: HUGHES, L. E., L.R.C.P. Lond., M.R.C.S. (Cirencester); JONES, T. E., L.R.C.P. Lond., M.R.C.S. (Aberayron, Cardiganshire); and MCINTOSH, J. W., M.B., Ch.B. Edin. (King's Lynn, Norfolk).

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—H.S. At rate of £150.
Barbados Lunatic Asylum.—Asst. Med. Supt. £500.
Belgrave Hospital for Children, Clapham-road, S.W.—H.S. and Asst. H.P. Each at rate of £100.
Brighton, New Sussex Hospital.—H.S. At rate of £50.
Bristol, Southmead Hospital.—Consultant to Ear, Nose and Throat Dept. £100.
Burnley, Victoria Hospital—H.P. At rate of £125.
Bury Infirmary.—Third H.S. At rate of £150.
Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.
Cardiff Royal Infirmary.—Gynæcological H.S. At rate of £50, and Ophth. H.S. At rate of £75.
Charing Cross Hospital.—Surg. Reg. £150. Also Asst. Surg.
Croydon Union, Mayday-road Hospital.—Res. Asst. M.O. £300.
Dudley, Guest Hospital and Eye Infirmary.—Asst. H.S. £150.
Dublin, City Skin and Cancer Hospital.—Res. H.S., &c.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120. Also Med. Radiographer. £120.
Folkestone, Royal Victoria Hospital.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £100 respectively.
Galway University College.—Professorship of Therapeutics, &c. Also Midwifery. Each £308–£320.
Hong-Kong.—Two Asst. M.O.H.'s. Each £740.
Hospital for Sick Children, Great Ormond-street, W.C.—H.S., H.P., and Asst. Cas. O. Each £50.
Indian Medical Service.—Commissions.
Lanark County.—Asst. M.O. £500.
Liverpool Heart Hospital.—Hon. Asst. Phys.
Liverpool, Waterloo and District General Hospital.—Res. H.S. £50.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 guineas.
Lucknow University.—Professor of Anatomy. Rs.1450 per mensem.
Melbourne, Victoria, Australia, Children's Hospital, Frankston.—Med. Supt. for Orthopædic Section £1000.
Miller General Hospital for South-East London, Greenwich-road, S.E.—Hon. P. to Children's Spec. Dept.
Ministry of Health, Whitehall, S.W.—Deputy Regional M.O. £800.
Nottingham General Dispensary.—Res. Lady Surg. £250.
Paddington Green Children's Hospital, London, W.—H.P. and H.S. Each at rate of £150.
Prince of Wales's General Hospital, Tottenham, N.—H.S.'s and H.P., also Jun. H.S. and Jun. H.P. At rate of £120 and £90 respectively.
Princess Louise Kensington Hospital for Children, West Kensington, W.—H.P. and H.S. At rate of £100 and £75. respectively.
Queen's Hospital for Children, Hackney-road, E.—P. in charge of Skin Dept.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150. Also Res. Anæsthetist.
Wakefield, City of.—Deputy M.O.H. £625.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Westerham (Kent), Aberchirder (Banffshire), Rhynie (Aberdeenshire), Tyldesley (Lancashire) and Fakenham (Norfolk).

The Home Secretary gives notice that he proposes to appoint a medical referee or referees under the Workmen's Compensation Act for the districts of the Northampton and Towcester, Newport Pagnell, and Leighton Buzzard County Courts (Circuit No. 23). Applications are invited from duly qualified medical practitioners resident at or near these centres, and should be addressed to the Private Secretary, Home Office, Whitehall, S.W. 1, on or before April 7th, 1928.

In consequence of the resignation, as from the 30th prox., of Dr. A. S. Percival, Newcastle-on-Tyne, Ophthalmic Specialist Medical Referee under the above Act for all County Courts in Circuits 1 and 2 (Northumberland and Durham), the appointment held by him will become vacant. Applications for the post should be addressed to the Private Secretary, Home Office, Whitehall, S.W. 1, and should reach him not later than April 11th, 1928.

Births, Marriages, and Deaths.

BIRTHS.

BICKERTON.—On March 17th, at Welbeck-street, the wife of J. Myles Bickerton, F.R.C.S. Eng., of a daughter.

HITCHCOCK.—On March 15th, at Harrogate, the wife of Dr. C. G. Hitchcock, of a son.

PARSONS.—On March 14th, at Wellington-road, St. John's Wood, the wife of Dr. R. A. Parsons, of a son.

MARRIAGES.

LAING—JOHNSTON.—On March 17th, at St. Anne's Church, Corstorphine, David Laing, M.B., Ch.B., to Hilda Katharine, youngest daughter of the late James Johnston and Mrs. Johnston, Corstorphine, Mid Lothian.

SIMPSON—CARTER.—On March 17th, at St. Mary's Church, Melton Mowbray, John Whitwell Hope Simpson, M.R.C.P. Lond., to Florence Mable, younger daughter of Mrs. Carter, of Melton Mowbray.

DEATHS.

FERRIER.—On March 19th, at York House, Church-street, Kensington, W., Sir David Ferrier, M.D., LL.D., F.R.S., in his 86th year.

KILNER.—On March 15th, at Northgate-street, Bury St. Edmunds, Henry Goff Kilner, Croix de Guerre, M.B., B.S., M.R.C.S., L.R.C.P.

KINKHEAD.—On March 18th, at Forster House, Galway, Prof. Richard John Kinkhead, M.D., in his 83rd year.

MAYNARD SMITH.—On March 18th, at Wimpole-street, W., Sidney Maynard Smith, Colonel, A.M.S., C.B., Croix de Guerre, Kt. of Grace of the Order of St. John of Jerusalem, M.B., B.S., F.R.C.S., aged 52.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

INTERNATIONAL MEDICAL GROUP FOR THE INVESTIGATION OF BIRTH CONTROL.

LAST September, in the course of a Conference on World Population, held at Geneva, medical representatives of different countries interested in the subject of birth control met informally and decided to form an international medical committee with the objects of coördinating biochemical, physiological, and statistical research bearing upon contraception, and of broadcasting the knowledge so obtained. By this means it is hoped to establish an informed and enlightened attitude to birth control through the medical professions of the different countries. The activities of the committee are to be limited to statistical investigations on the reliability, simplicity, and harmlessness of different contraceptives; immunological, biochemical, or physiological research work on the problems of contraception and sterility, and information on the general attitude of a country towards birth control. The headquarters are to be in England and the committee is to be essentially a medical information bureau and non-propagandist.

Invitations were sent out at the beginning of December for contributions to the first report and three replies were received, which constitute the first quarterly review. Dr. Leunbach (Denmark) reports that he has gradually given up the use of the cervical pessary, which is only suitable for 5–10 per cent. of women. It requires a stud-shaped cervix and a rather tight vagina, and very few women can apply it correctly themselves. He now uses only the Dutch pessary with watch-spring rim, such as is sold in this country as the "Lambert" or "Norman Haire" pessary. It took his manufacturer half a year to find just the right kind of spring, which must be neither too tight nor too slack. The spring used is an unheated Swiss watch spring and the cost about 3*s*. A good pessary should last a year or more. In order that a pessary should be easy to insert and held firmly in position in the vagina it must be large in size, and Dr. Leunbach has now made it his rule to use the largest that can without inconvenience be placed in the vagina, usually between 75 and 82 mm. in diameter. He quotes a case where a No. 75 managed to lie with its anterior rim in the recess below the symphysis and its hinder rim still in front of the cervix, so that conception occurred. Most of the failures he has seen have occurred because the pessary was many sizes too small. In the year 1926–7 he fitted 800 pessaries and only had three failures. He has seen no case where the pessary has done any harm or has reduced sexual enjoyment. He has come to the conclusion, after careful experiment, that all contraceptive suppositories are practically worthless. For the douche water he recommends chinosol, or tablets made of trypaflavine and boric acid of each 0·02 g., but any harmless substance will serve.

The official attitude to birth control in Denmark is a passive hostility, but there is no legal opposition, and public and medical opinion is gradually coming round to the practice. In Sweden, Dr. Alma Sundquist reports, the general attitude of the doctors is enlightened and tolerant, and the law against public information about contraceptives is hardly ever enforced. In Germany, according to Dr. H. Riese, the teaching of birth control is regarded as contrary to medical honour, and not even the gynæcologist is taught contraceptive methods. At his clinic he recommends a gelatin suppository containing quinine, boric acid, and lactic acid, placed against the cervix immediately before the introduction of the rubber cap. On the morning after use, the woman is instructed to irrigate with potassium permanganate or lactic acid. He has had no failures in the several hundred cases he has seen in the last two years.

The review concludes with an account of the position in England by Dr. C. P. Blacker, taken from the annual reports of the Ministry of Health 1926–7, and of the Walworth Women's Welfare Centre, 1926–7, the works of Dr. Marie Stopes, and two books published by the National Council of Public Morals—viz., "The Ethics of Birth Control" (Macmillan) and "The Medical Aspects of Contraception" (Martin Hopkinson).

A SATISFACTORY MICROSCOPE.

WE are informed that the London School of Hygiene and Tropical Medicine has placed an order with Messrs. R. and J. Beck, Ltd., for over two hundred microscopes for use in the laboratories now under construction in Gower-street. The order has been given on the recommendation of a small committee, which has been considering the matter for some time in consultation with the Department of Applied Optics, National Institute for Medical Research. The type of microscope selected embodies features that have been evolved to meet the needs of the heads of departments at the school. Its base is of rigid construction with points of support sufficiently wide spread to ensure stability in any position. The foot is of the type now being produced by Messrs. Beck combining the advantages of the horse-shoe or Continental model with the so-called English foot. The stage is of the completely built-in mechanical type with travel of 1½ in. + 1 in., the entire top plate of the stage forming the moving part. On the stage a slide-holder of new design is provided, in which the slide is firmly held without springs. The fine adjustment is of the double-lever pattern, operated by milled heads on either side. The body is 2 in. in diameter and is provided with an adjustable graduated drawtube. The substage is actuated by rack and pinion, and all substage appliances are carried on Akehurst slides. Thus, the interchange of illuminating systems is both easy and accurate. The optical equipment is ample for all bacteriological requirements, and the objectives are to be coloured externally so as to enable them to be recognised at sight. Messrs. Beck have agreed that certain rigid tests shall be applied to the whole equipment before delivery is accepted.

THE "HELSAN" TUBERCULOSIS DEMONSTRATION IN SWEDEN.

As long ago as 1904 an elaborate scheme was devised by the Swedish National Association against Tuberculosis for solving the tuberculosis problem on a small scale in an isolated country area. The working of this scheme is the subject of a long paper in English, in *Acta Tuberculosea Scandinavica*,[1] by Dr. G. Neander, Secretary General of this Association. The area chosen was in the north of Sweden, and early in 1906 a whole-time specialist in tuberculosis was appointed together with two nurses. A building was purchased to serve as a combined cottage hospital, children's home, and doctor's residence. A wholesale examination of the population in 1906 was repeated in 1908, with the result that 12 per cent. of the total population examined in 1908 were found to be suffering from pulmonary tuberculosis. By the addition of 33 cases of surgical tuberculosis, the total incidence of tuberculosis in the population examined was brought up to 14 per cent. The campaign for reducing this tuberculosis-rate was conducted on lines familiar to every tuberculosis worker. When children could not be removed to the cottage hospital from tuberculous homes, every effort was made to reduce the exposure to infection in these homes to a minimum. All the 22 healthy children removed from tuberculous homes to the "Helsan" Home were found, in 1914, to be in excellent condition. An educational campaign was directed to abolishing, among other things, the old-fashioned cupboard beds in which two or more persons used to sleep almost hermetically sealed up. When, in 1926, another wholesale examination was made, it was found that the incidence of pulmonary tuberculosis had fallen from 12 to 8 per cent., and the total incidence of all forms of tuberculosis from 14 to 9·5 per cent. As for the tuberculosis mortality, it was found that this had declined from 8·3 per thousand in the five-year period 1911–1915, to 6 per thousand in the five-year period 1921–1925—i.e. a fall of 28 per cent. This fall was the more striking, as the fall in the tuberculosis death-rate in the district of which the experimental area is a part was only 0·5 per cent. Indeed, while the tuberculosis death-rate had fallen dramatically in the experimental area, it had actually increased in the adjoining areas.

M.D.—The first passage will be found in Pantagruel, Bk. II., c. vii. The exact quotation from Rabelais is: Quæstio subtilissima: utrum Chimæra, in vacuo bombinans possit comedere secundas intentiones? It purports to be an entry in the catalogue of books in the library of St. Victor in Paris. The second reference, also ribald when completed, is to a passage in the Summa Theologiæ: An plures angeli possint esse simul in eodem loco? Non, quia non possunt esse duæ causæ completæ unius effectus. Both authors would be likely to be quoted in a mediæval medical work.

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[1] The "Helsan" Institute in Norrbotten. By Gustaf Neander. Copenhagen: Levin and Munksgaard. 1928. Pp. 128.

BOARD OF EDUCATION: MEDICAL BRANCH.—The Medical Branch of the Board will be transferred from 54, Victoria-street, London, S.W. 1, to the Board's main office in Whitehall, on April 2nd, and correspondence from that date should be addressed to the Secretary, Board of Education (Medical Branch), Whitehall, London, S.W. 1. The telegraphic address will be "Meducation, Parl. London," and the telephone number, Victoria 9800.